JVC

# SERVICE MANUAL

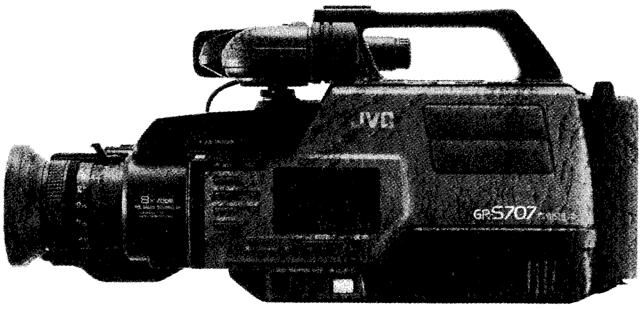
## VHS VIDEO MOVIE

## GR-S707EG/EK

S-VHS-C 625 VHS PAL

Hi-Fi

HQ High Quality



## SPECIFICATIONS

Format : S-VHS / VHS PAL standard with Hi-Fi audio
Power source : DC 9.6 V ⎓
Power consumption : 12 W
Signal system : PAL-type colour signal and separated Y/C signals conforming to PAL standard
Video recording system : Rotary, two-head helical scan system with slant doubleazimuth combination video heads
Luminance: FM recording
Colour: Converted sub-carrier direct recording
Conforms to S-VHS standard
Hi-Fi audio recording system : Deep-layer recording system conforming to stereo Hi-Fi VHS standard
No. of audio channels : 2 Hi-Fi audio channels
1 normal audio channel
Cassette : S-VHS-C / VHS-C cassette
Tape speed (SP) : 23.39 mm/sec
(LP) : 11.70 mm/sec
Recording time
Max. (SP) : 30 minutes (with SE-C30 cassette)
(LP) : 60 minutes (with SE-C30 cassette)

**VIDEO**
Output : 1 Vp-p, 75 ohms, unbalanced (via AV connector)
Input : 0.5 to 2.0 Vp-p, 75 ohms, unbalanced
S/N ratio : More than 43 dB (with Rohde & Schwarz noise meter)

**AUDIO**
Output : -6 dBs, 1 k-ohm (via AV connector)
Input : -8 dBs, high impedance
Microphone input : -68 dBs, high impedance, unbalanced

**Hi-Fi AUDIO**
Frequency response: 20 Hz to 20,000 Hz
Dynamic range : More than 80 dB
Wow and flutter : Less than 0.005 % WRMS

Pickup : 1/2" format CCD
Minimum required illumination : 8 lux (at F/1.2)
Illumination range : 8 – 100,000 lux
Lens : F1.2 f = 9 – 72 mm, 8:1 two-speed power zoom lens with auto iris control and macro position, filter diameter 52 mm
Viewfinder : Electronic viewfinder with 0.7" black/white CRT

Selectable high-speed shutter : Switchable (1/250, 1/500, 1/1000 sec.)
Color temperature switching : Switchable (3,200 K/4,500 K/5,500 K)
White balance adjustment : Full-auto/preset standard
Operating temperature : 0°C to +40°C
Operating humidity : 35 % to 80 %
Storage temperature : -20°C to +50°C
Weight : 2 kg (with viewfinder)
Dimensions : 196(W) x 181(H) x 376(D) mm (incl. viewfinder)

**AA-V6EG/EK SPECIFICATIONS**
Power requirement : AC 110 – 240 V∿, 50/60 Hz
Power consumption : 23 watts
Output : DC 14 V ⎓ 1.1 A (Charge)
DC 9.6 V ⎓ 1.2 A (VideoMovie)
Charging system : Constant current, peak detection, timer controlled
Dimensions : 150(W) x 42(H) x 69(D) mm
Weight : Approx. 380 g

**C-P5U SPECIFICATIONS**
Type : VHS cassette adapter
Dimensions : 188(W) x 25(H) x 104(D) mm
Weight : 240 g
Accessory : "R6"-size battery x 1

**Provided accessories:**
AC power adapter/battery charger . . AA-V6EG/EK
Cassette adapter . . . . . . . . . . . . . . . . . . . . C-P5U
Cassette tape . . . . . . . . . . . . . . . . . . . . SE-C30
Battery pack . . . . . . . . . . . . . . . . . . . BN-V66RU
AV/S output cable . . . . . . . . . . . . . VC-V8961SE
Stereo earphones
Shoulder strap
Lens cap (white balance cap)
Battery for clock operation . . . . . . . . . . . . CR2025

**For optional accessories, refer to pages 42 and 43**

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**No. 86090**
**September 1989**

**NOTE: For a technical description, please refer to Technical Guide VTG86017 GR-S707 PAL.**

# TABLE OF CONTENTS

**Section Title Page**

**Important Safety Precautions**

**INSTRUCTIONS**

## 1. SERVICE CAUTIONS & DISASSEMBLY

1 . 1 PRECAUTIONS ........ 1 - 1
1 . 2 REQUIRED TEST EQUIPMENT, FIXTURES/TOOLS AND OTHERS ........ 1 - 1
  1 . 2 . 1 Test equipment, etc. ........ 1 - 1
  1 . 2 . 2 Special test equipment and tools required for adjustments ........ 1 - 2
1 . 3 REPLACEMENT OF CHIP PARTS ........ 1 - 3
  1 . 3 . 1 Soldered condition of chip parts ........ 1 - 3
  1 . 3 . 2 How to remove chip parts ........ 1 - 3
  1 . 3 . 3 Preheating and soldering chip parts ........ 1 - 3
  1 . 3 . 4 How to set and solder chip parts ........ 1 - 3
1 . 4 REMOVING OF FLAT ICs ........ 1 - 3
1 . 5 DISASSEMBLY OF CAMERA SECTION ........ 1 - 4
  1 . 5 . 1 Electronic viewfinder (E. VF) ........ 1 - 4
  1 . 5 . 2 Microphone, Cassette cover and Front cover ..... 1 - 4
  1 . 5 . 3 Upper case ........ 1 - 5
  1 . 5 . 4 Rear cover and Top cover ........ 1 - 5
  1 . 5 . 5 Camera section ........ 1 - 6
  1 . 5 . 6 Setup for troubleshooting and check of the camera section ........ 1 - 6
  1 . 5 . 7 P.C. boards of camera section ........ 1 - 7
  1 . 5 . 8 Replacement of CCD image sensor ........ 1 - 9
  1 . 5 . 9 Replacement of OP block ........ 1 - 9
  1 . 5 . 10 Optical block main parts ........ 1-10
  1 . 5 . 11 CRT for E. viewfinder ........ 1-10
1 . 6 DISASSEMBLY OF DECK SECTION ........ 1-11
  1 . 6 . 1 Bottom cover ........ 1-11
  1 . 6 . 2 Lower case ........ 1-11
  1 . 6 . 3 Setup for troubleshooting and check of the deck section ........ 1-12
  1 . 6 . 4 P.C. boards of deck section ........ 1-13
  1 . 6 . 5 Replacement of cassette housing ........ 1-14
  1 . 6 . 6 Manual setting of cassette housing to Eject mode ........ 1-14
  1 . 6 . 7 Check and adjustment of phase of mechanism ... 1-14
  1 . 6 . 8 Replacement of upper drum ........ 1-16
  1 . 6 . 9 Caution at replacement of PREAMP board ........ 1-17
1 . 7 MAINTENANCE AND INSPECTION ........ 1-17
  1 . 7 . 1 Standard servicing schedule for main components ........ 1-18
  1 . 7 . 2 Remarks ........ 1-19

## 2. DECK SECTION ADJUSTMENT

2 . 1 PREPARATION ........ 2 - 1
  2 . 1 . 1 Precautions ........ 2 - 1
  2 . 1 . 2 Hooking up ........ 2 - 2
2 . 2 REGULATOR CIRCUIT ........ 2 - 3
2 . 3 SERVO & INTERCHANGEABILITY ........ 2 - 3
2 . 4 PREAMP CIRCUIT ........ 2 - 7
2 . 5 Y (LUMINANCE) CIRCUIT ........ 2 - 8
  2 . 5 . 1 C (conventional) VHS Y signal circuit ........ 2 - 8
  2 . 5 . 2 S-VHS Y signal circuit ........ 2-10
2 . 6 COLOR SIGNAL CIRCUIT ........ 2-13
  2 . 6 . 1 C (conventional) VHS color signal circuit ........ 2-13
  2 . 6 . 2 S-VHS color signal circuit ........ 2-14
2 . 7 AUDIO CIRCUIT ........ 2-16
  2 . 7 . 1 Normal audio circuit ........ 2-16
  2 . 7 . 2 Hi-Fi audio circuit ........ 2-17

## 3. CAMERA SECTION ADJUSTMENT

3 . 1 PREPARATION ........ 3 - 2
  3 . 1 . 1 Precautions ........ 3 - 2
  3 . 1 . 2 Hooking up ........ 3 - 2
3 . 2 Y (LUMINANCE) SIGNAL SYSTEM ........ 3 - 3
3 . 3 COLOR SIGNAL SYSTEM ........ 3 - 6
  3 . 3 . 1 Standard indoor mode ........ 3 - 6
  3 . 3 . 2 Preset outdoor white balance ........ 3-10
  3 . 3 . 3 Auto white balance ........ 3-11
3 . 4 FOCUS ........ 3-12
  3 . 4 . 1 Back focus ........ 3-12
  3 . 4 . 2 Auto focus ........ 3-13
3 . 5 ELECTRONIC VIEWFINDER (E. VF) ........ 3-14

## 4. OVERALL WIRING AND BLOCK DIAGRAMS

4 . 1 OVERALL WIRING ........ 4 - 1
4 . 2 VIDEO & IMAGER BLOCK DIAGRAMS ........ 4 - 2
4 . 3 THD BLOCK DIAGRAM ........ 4 - 3
4 . 4 FAW BLOCK DIAGRAM ........ 4 - 4
4 . 5 Y/C BLOCK DIAGRAM ........ 4 - 5
4 . 6 AUDIO BLOCK DIAGRAM ........ 4 - 6
4 . 7 POWER SYSTEM BLOCK DIAGRAMS ........ 4 - 7

## 5. SCHEMATIC DIAGRAMS AND CIRCUIT BOARDS

5 . 1 CIRCUIT BOARD LOCATION ........ 5 - 1
5 . 2 SCHEMATIC DIAGRAM NOTES ........ 5 - 2
5 . 3 REPLACING SUBMINIATURE "CHIP" PARTS ........ 5 - 3
5 . 4 KEY TO ABBREVIATIONS ........ 5 - 4
5 . 5 SEMICONDUCTOR SHAPES ........ 5 - 6
5 . 6 REGULATOR, SERVO & REAR SCHEMATIC DIAGRAMS ........ 5 - 8
5 . 7 MECHACON SCHEMATIC DIAGRAM ........ 5 - 9
5 . 8 S/S CIRCUIT BOARD ........ 5-10
5 . 9 MIC AMP SCHEMATIC DIAGRAM ........ 5-11
5 . 10 MIC AMP CIRCUIT BOARD ........ 5-11
5 . 11 Y/C SCHEMATIC DIAGRAM ........ 5-12
5 . 12 Y/C CIRCUIT BOARD ........ 5-13
5 . 13 PRE AMP SCHEMATIC DIAGRAM ........ 5-14
5 . 14 PRE AMP, UPPER DRUM & TRIGGER CIRCUIT BOARDS ........ 5-14
5 . 15 OPERATION SCHEMATIC DIAGRAM ........ 5-15
5 . 16 AUDIO SCHEMATIC DIAGRAM ........ 5-16
5 . 17 AUDIO CIRCUIT BOARD ........ 5-17
5 . 18 VIDEO SCHEMATIC DIAGRAM ........ 5-18
5 . 19 VIDEO CIRCUIT BOARD ........ 5-19
5 . 20 CPU & BATTERY SCHEMATIC DIAGRAMS ........ 5-20
5 . 21 CPU & BATTERY CIRCUIT BOARDS ........ 5-21

Section Title Page

5.22 BOTTOM SCHEMATIC DIAGRAM ........ 5-22
5.23 BOTTOM CIRCUIT BOARD ........ 5-23
5.24 FAW SCHEMATIC DIAGRAM ........ 5-24
5.25 FAW CIRCUIT BOARD ........ 5-25
5.26 THD SCHEMATIC DIAGRAM ........ 5-26
5.27 THD CIRCUIT BOARD ........ 5-27
5.28 IMAGER SCHEMATIC DIAGRAM ........ 5-28
5.29 IMAGER CIRCUIT BOARD ........ 5-29
5.30 CAMERA CTL SCHEMATIC DIAGRAM ........ 5-30
5.31 ELECTRONIC VIEWFINDER SCHEMATIC DIAGRAMS ........ 5-31
5.32 ELECTRONIC VIEWFINDER CIRCUIT BOARD ........ 5-31

6. EXPLODED VIEWS AND PARTS LIST

6.1 STANDARD PART NUMBER CODING ........ 6-1
- 6.1.1 Screw coding ........ 6-1

6.2 PACKING ASSEMBLY <M1> ........ 6-1
6.3 FINAL ASSEMBLY <M2> ........ 6-2
6.4 CHASSIS ASSEMBLY <M4> ........ 6-4
6.5 MECHANISM ASSEMBLY <M3> ........ 6-6
6.6 OPTICAL BLOCK ASSEMBLY <M5> ........ 6-8
6.7 ELECTRONIC VIEWFINDER ASSEMBLY <M6> ........ 6-10

7. ELECTRICAL PARTS LIST

7.1 STANDARD PART NUMBER CODING ........ 7-2
- 7.1.1 Fixed resistor coding ........ 7-2
- 7.1.2 Fixed capacitor coding ........ 7-3
- 7.1.3 Fuse coding ........ 7-5

S/S BOARD ASSEMBLY <01> ........ 7-6
Y/C BOARD ASSEMBLY <02> ........ 7-9
CTL SUB BOARD ASSEMBLY <35> ........ 7-17
AUDIO BOARD ASSEMBLY <03> ........ 7-18
PRE AMP BOARD ASSEMBLY <04> ........ 7-21
MIC AMP BOARD ASSEMBLY <07> ........ 7-22
REAR BOARD ASSEMBLY <12> ........ 7-23
IMAGER BOARD ASSEMBLY <21> ........ 7-23
VIDEO BOARD ASSEMBLY <22> ........ 7-25
VIDEO SUB BOARD ASSEMBLY <36> ........ 7-28
CPU BOARD ASSEMBLY <23> ........ 7-28
BOTTOM BOARD ASSEMBLY <24> ........ 7-30
FAW BOARD ASSEMBLY <25> ........ 7-30
THD BOARD ASSEMBLY <26> ........ 7-32
BATTERY BASE BOARD ASSEMBLY <27> ........ 7-33
UPPER DRUM BOARD ASSEMBLY <30> ........ 7-33
AV JACK BOARD ASSEMBLY <31> ........ 7-33
TRIGGER BOARD ASSEMBLY <32> ........ 7-33
SENSOR BOARD ASSEMBLY <33> ........ 7-33
LED BOARD ASSEMBLY <34> ........ 7-33
E. VIEWFINDER ASSEMBLY <41> ........ 7-34

Section Title Page

8. TECHNICAL INFORMATIONS

8.1 S/S BOARD ASSEMBLY ........ 8-1
- 8.1.1 IC1 (M37405E5-195FP) ........ 8-1

8.2 CPU BOARD ASSEMBLY ........ 8-2
- 8.2.1 IC301 (M37100M8-492FP) ........ 8-2
- 8.2.2 IC302 (M37450M2-152FP) ........ 8-3
- 8.2.3 IC303 (S-3500A2) ........ 8-4

9. SERVICE GUIDE

9.1 EMERGENCY MODE TABLE ........ 9-1

# Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

**ADVARSELI**

**LITHIUMBATTERIER. EKSPLOSIONSFARE.**
**UDKSIFTNING MÅ KUN FORETAGES AF SAGKYNDIG**
**OG SOM BESKREVET I SERVICEMANUALEN**

## ● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
Replace only with specified part numbers.
**Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.**

3. Fuse replacement caution notice.
Caution for continued protection against fire hazard.
Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

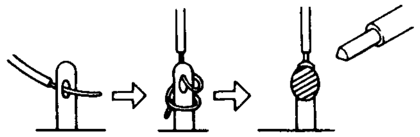


**Fig. 1**

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

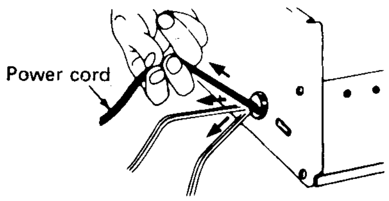


**Fig. 2**

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
   1) **Connector part number** : E03830-001
   2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
   3) **Replacement procedure**
      (1) Remove the old connector by cutting the wires at a point close to the connector.
      Important : Do not reuse a connector (discard it).

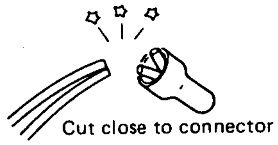


**Fig. 3**

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

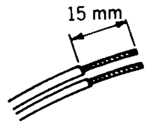


**Fig. 4**

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

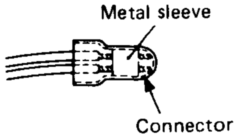


**Fig. 5**

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

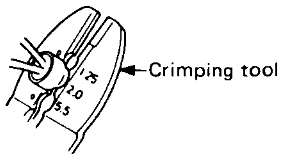


**Fig. 6**

(5) Check the four points noted in Fig. 7.

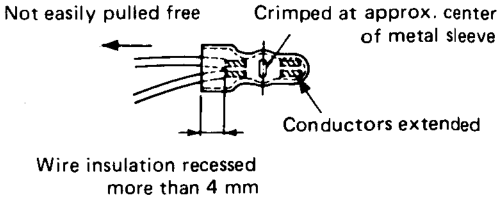

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

**Fig. 7**

## Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

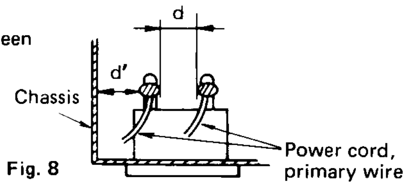


Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   **Measuring Method:** (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

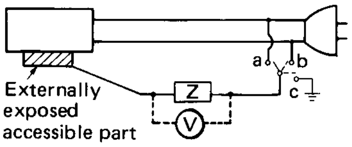


Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   **Measuring Method:**
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

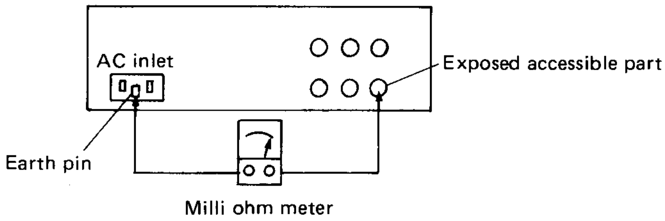


Fig. 10

**Grounding Specifications**

| Region | Grounding Impedance (Z) |
|---|---|
| USA & Canada | Z ≦ 0.1 ohm |
| Europe & Australia | Z ≦ 0.5 ohm |

| AC Line Voltage | Region | Insulation Resistance (R) | Dielectric Strength | Clearance Distance (d), (d') |
|---|---|---|---|---|
| 100 V | Japan | R ≧ 1 MΩ/500 V DC | AC 1 kV 1 minute | d, d' ≧ 3 mm |
| 100 to 240 V | | | AC 1.5 kV 1 minute | d, d' ≧ 4 mm |
| 110 to 130 V | USA & Canada | – | AC 900 V 1 minute | d, d' ≧ 3.2 mm |
| 110 to 130 V<br>200 to 240 V | Europe & Australia | R ≧ 10 MΩ /500 V DC | AC 3 kV 1 minute (Class II)<br>AC 1.5 kV 1 minute (Class I) | d ≧ 4 mm<br>d' ≧ 8 mm (Power cord)<br>d' ≧ 6 mm (Primary wire) |

**Table 1** Specifications for each region

| AC Line Voltage | Region | Load Z | Leakage Current (i) | a, b, c |
|---|---|---|---|---|
| 100 V | Japan | 1 kΩ | i ≦ 1 mA rms | Exposed accessible parts |
| 110 to 130 V | USA & Canada | 0.15 µF<br>1.5 kΩ | i ≦ 0.5 mA rms | Exposed accessible parts |
| 110 to 130 V<br>220 to 240 V | Europe & Australia | 2 kΩ | i ≦ 0.7 mA peak<br>i ≦ 2 mA dc | Antenna earth terminals |
| | | 50 kΩ | i ≦ 0.7 mA peak<br>i ≦ 2 mA dc | Other terminals |

**Table 2** Leakage current specifications for each region

**Note:** These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

**JVC**

# INSTRUCTIONS

# GR-S707

## CAMERA-RECORDER/PLAYER

MANUEL D'INSTRUCTIONS: CAMERA-ENREGISTREUR/LECTEUR GR-S707E
BEDIENUNGSANLEITUNG: KAMERA-RECORDER GR-S707E
MANUAL DE INSTRUCCIONES: CAMERA/GRABADORE GR-S707E
GEBRUIKSANWIJZING: KAMERA/RECORDER GR-S707E
BRUKSANVISNING: KAMERA BANDSPELARE GR-S707E
MANUALE DI ISTRUZIONI: TELECAMERA/REGISTRATORE GR-S707E

**Specifically for the GR-S707E/AA-V6EG**

**Spécial pour le GR-S707E/AA-V6EG**

**Für modellasführung GR-S707E/AA-V6EG**

**Especialmente para la GR-S707E/AA-V6EG**

**Speciaal voor de GR-S707E/AA-V6EG**

**Speciellt avsedd för GR-S707E/AA-V6EG**

**Specifico per il GR-S707E/AA-V6EG**

**Super VHS**
videomovie

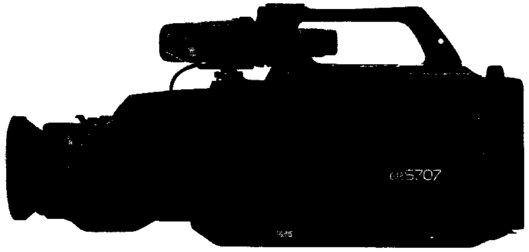
S-VHS-C 625 VHS PAL

HQ High Quality

CCD
Charge Coupled Device

AF AUTO FOCUS

Hi-Fi STEREO



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# SAFETY PRECAUTIONS

**WARNING:**
**TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.**

**This equipment should be used with DC 9.6 V ⎓ only.**

**CAUTION:**
**To prevent electric shocks and fire hazards, do NOT use any other power source.**

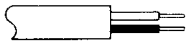
The AA-V6EG AC Power Adapter/Battery Charger should be used with 110 – 240 V∿, 50/60 Hz only.

**Caution:**
To prevent electric shocks and fire hazards, do NOT use any other power source.

### IMPORTANT (IN the United Kingdom) Mains Supply (240 V∿, 50 Hz only)

**IMPORTANT**

Do not make any connection to the Larger Terminal coded E or Green. The wires in the mains lead are coloured in accordance with following code:



If these colours do not correspond with the terminal identifications of your plug, connect as follows:
Blue wire to terminal cord N (Neutral) or coloured Black.
Brown wire to terminal coded L (Live) or coloured Red.
*If in doubt – consult a competent electrician.*

**Note**
We recommend that you should disconnect the AC cord from the outlet.

S-VHS-C 625 VHS-C PAL

Cassettes marked "S-VHS-C" and "VHS-C" can be used with this VideoMovie. However, S-VHS recordings are possible only with cassettes marked "S-VHS-C".

ENGLISH

**Warning on lithium battery**
The battery used in this device may present a fire or chemical burn hazard if mistreated. Do not recharge, disassemble, heat above 100°C or incinerate.
Replace battery with Panasonic (Matsushita Electric), CR 2025; use of another battery may present a risk of fire or explosion.
- Dispose of used battery promty.
- Keep away from children.
- Do not disassemble and do not dispose of in fire.

**CAUTION:**
To prevent shock, do not open the cabinet. No user serviceable parts inside. Refer servicing to qualified personnel.

**NOTES:**
- The rating plate (serial number plate) and safety caution of the main unit are on its bottom.
- The rating plate (serial number plate) of the viewfinder is on its bottom.
- The rating plate (serial number plate) of the AC power adapter/battery charger is on its bottom.

The provided viewfinder is the VF-V707E. Do not use any other viewfinder with the GR-S707E.

This equipment has been produced to comply with Directive number 82/499/EEC.

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# CONTENTS

Precautions .......................... 3
Features .......................... 4
Video cassettes .......................... 5
Controls and connectors .......................... 6
Live recording has never been so easy .......... 10
LCD indications .......................... 11
Viewfinder indications .......................... 12
For a better understanding of S-VHS and VHS .. 14
Information on the GR-S707E's audio system .. 16
Basic preparations .......................... 17
Power supply system .......................... 19
Loading and unloading a video cassette .......... 20
Full-auto recording operation .......................... 21
Power save and tape protection circuit .......... 24
Assemble recording technique – 1 .......... 24
Assemble recording technique – 2 .......... 24
Assemble recording technique – 3 .......... 24

Advanced videography techniques

White balance adjustment .......................... 25
AGC .......................... 25
Iris control .......................... 25
Backlight compensation .......................... 26
Focusing .......................... 26
Zooming .......................... 27
Macro shots .......................... 27
Fade-in/fade-out .......................... 28
Index code marking .......................... 28
Multiple-speed electronic shutter .......... 28

Special recording functions

Animation shooting .......................... 29
Self-timer shooting .......................... 30
Time-lapse shooting .......................... 30
Recording the date/time .......................... 31
Playback .......................... 32
Connections for playback .......................... 34
Editing techniques .......................... 36
Time counter functions .......................... 39
Charging the battery pack .......................... 40
Using the cassette adapter (provided) .......... 41
System flexibility .......................... 42
Using optional accessories .......................... 44
Using the GR-S707E as a video camera .......... 46
Supplemental information .......................... 47
In case of difficulty .......................... 48
Specifications .......................... 49

# PRECAUTIONS

**For safety, strictly observe the following instructions.**
- Do not disassemble or modify the unit.
- Prevent inflammables, water and metallic objects from entering the unit.
- Do not use the unit when there is lightning in the vicinity. Disconnect the power cable of connected equipment.

**Avoid using the unit under the following conditions:**
- Places subject to excessive humidity or dust.
- Near appliances generating strong magnetic or electric fields (speakers, broadcasting antennas, etc.).
- Places subject to soot or steam such as near a cooking stove.
- Places subject to excessive shock or vibration.
- Near a television set (rolling pictures or howling might result).
- Extremely hot places.

**Do not expose the unit to high temperatures over 40°C for long periods.**

If the unit should be subjected to direct sunlight, or left in a closed car in summer, or placed near a heater, the CCD and the auto-focus sensor may deteriorate and the cabinet may become deformed. Furthermore, this also may cause the transistors and other electronic and mechanical parts to malfunction. Remember the following:
- Do not leave the unit in places of over 50°C.
- Do not use the unit in places of over 40°C.
- Do not use the unit in places of below 0°C.
- Protect the unit from excessively dry or excessively humid conditions (below 35 % or above 80 % humidity).
- For long storage, select a place between -20°C and 30°C.

**Take special care for protection of the unit.**
- Do not allow the unit to become wet.
- Do not leave the unit in closed cars on hot summer days.
- Take special care not to drop the unit or strike it against hard objects. Protect from shocks during transportation.

**Make it a rule to observe the following instructions.**
- Do not remove the battery pack or disconnect other power supply units during recording or playback before sliding the POWER switch to OFF. If not observed, this will cause tape damage.
- When the unit is not in use, remove the battery pack.

**Keep the lens and viewfinder eyepiece always clean.**
- When the lens is dirty or dusty, blow it off first and then gently wipe with a soft brush or lens cleaning paper.
- The lens is likely to become moldy if left dirty.

**Be careful not to damage the CCD.**
- Do not keep the lens directed at extremely bright objects such as the sun or other light sources for long periods. Although the CCD is less susceptible to such burn than a tube would be, caution should be exercised when using this unit. Most importantly, the lens should be capped except while actually shooting.
- Do not direct the eyepiece of the viewfinder at the sun.

**Auto-focus requires a bit of consideration.**
- Do not touch the focus ring while the auto-focus mechanism is in operation as this could damage the auto-focus mechanism.
- When a filter or a special-effect lens is to be attached to the end of the lens, be sure to turn power off or switch from the Auto-focus mode to the Manual mode. NEVER attempt to attach a filter or lens while the auto-focus mechanism is operating as this will result in malfunctioning. (If a teleconversion or wide-angle conversion lens is attached, the auto-focus mode cannot be used.)

**Handle the unit carefully.**
- Protect the microphone from excessive shocks.
- Do not carry the unit by holding it only by the viewfinder.

**Moisture condensation prevents use of the unit.**
- You have observed that pouring a cold liquid into a glass will cause drops of water to form on the glass's outer surface. This same phenomenon occurs on the head drum of a video recorder when the recorder is moved from a cool place to a warm place, after heating in a cold room, under extremely humid conditions or in a place directly subjected to the cool air from an air conditioner.
- Moisture on the head drum can cause severe damage to the video tape, and can lead to internal damage to the recorder itself.
- If moisture condensation occurs on the head drum, a condensation warning appears in the recorder LCD and the unit enters the Stop mode, unable to function. In such a case, wait for a few hours until the indicator disappears.

**Maintenance**
- When the cabinet is dusty, clean by gently wiping with a soft cloth.
- Avoid the use of strong cleaning agents such as benzene or alcohol as they may damage the cabinet.
- Cleaning should be done only after the battery pack has been removed or other power units have been disconnected.

**Serious malfunctioning**

If malfunctioning occurs, stop using the unit immediately and consult your local JVC dealer.

# FEATURES

## Professionally-Oriented Design

- Maximum creative opportunity is made possible by providing both Super VHS and Hi-Fi stereo sound together with complete manual control of several functions, as well as allowing comprehensive interfacing with a wide variety of components.
- Standard-size 62 mm TS (Tape Stabilizing) head drum.

## Super VHS

- Super VHS provides the best pictures ever available in a compact VideoMovie. Horizontal resolution and colour are superior, dubbing results are outstanding.
- Y/C (luminance/chrominance) separated Out connector for retaining maximum picture quality.
- Results are superb using the GR-S707E as a go-anywhere unit for live-action recording.
- The GR-S707E can also be used to record in VHS or play back VHS recordings as well.

## Hi-Fi Stereo Sound

- A first for compact VideoMovies, it conforms to the Hi-Fi VHS standard with a dynamic range of 80 dB and frequency response from 20 to 20,000 Hz.
- Hi-Fi recording level controls with peak-hold level indicator and ALC On/Off switch for manual or automatic setting as desired.
- Built-in unidirectional stereo microphone.
- Audio Line Inputs for connection to optional amplifiers or mixing equipment equipped with specialized microphones.

## Consistent Picture Quality

- Super Double-Azimuth 4-head system for optimum performance in both SP and LP modes as well as slow-motion, still, frame advance, and variable-speed search.
- Flying erase head for glitch-free assemble and insert editing.

## VHS HQ System

- HQ (High Quality) System circuitry comprising a luminance noise reduction circuit (YNR), a detail enhancer (DE), and a higher white clip level (WCL) for better VHS recording results.

## Additional Features:

### Shooting

- Super-high-resolution 1/2" field-storage-type CCD with 420,000 pixels (total).
- F1.2, two-speed 8x power zoom lens with macro position.
- Time-lapse, Animation, and Self-timer functions.
- Multiple-speed electronic shutter 1/50, 1/250, 1/500, and 1/1000-sec. for sharp, clear special-effects VCR playback.
- 8-lux low-light sensitivity for superior results even in candlelit scenes.
- Full-auto operation with manual overrides: manual iris; iris lock with F-stop indication, white balance lock; and AGC on/off.
- TCL* Image Sensing auto-focus system with manual override.
- Trigger-linked audio/video fader smooths scene-to-scene transitions with professional-looking fade-ins or fade-outs.
- Backlight compensation (BLC) for difficult lighting situations.
- Remaining tape time indication with tape-end warning.
- Quick Review function and Retake functions.
- Time counter.
- One-shot time counter.
- Twin-trigger system for comfortable shooting in any position.
- Tally lamp (on/off switchable).

### Versatility and Editing

- Flying erase head.
- Insert editing and Audio dubbing.
- Master Edit Control system allows control of VideoMovie and attached designated JVC VCRs using GR-S707E's controls alone.
- Dubbing mode switch for best possible dubbing results.
- VHS Index Search System (VISS) (only manual marking).
- Exclusive S-VIDEO Out, A/V Out and Audio Line Input connectors.
- Variable-speed search.
- Stills and slow-motion playback.
- Adjustable electronic viewfinder with comprehensive indications and built-in diopter.
- Date/time recording for convenient cataloguing of events.
- Three-way power supply flexibility: battery pack, AC adapter, or car battery via lighter socket.
- Optional remote control unit (RM-V15U).

### Ease-of-Use

- One-button full-auto operation of focus, exposure, and white balance.
- Image Sensing autofocus effective for most subjects even through water or glass.
- Dual LCD panels for visual checking of operating modes at a glance.
- Automatic Colour Tracking white balance adjustment for natural colours indoors and out.
- Trigger alarm gives audible warning of recording start/stop operaitons.
- One-button recording standby mechanism.
- Only 2 kg.

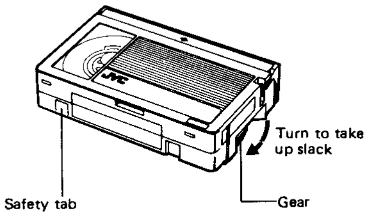
---

* A registered trademark.

The GR-S707E is designed to be used with PAL-type colour television signals. It cannot be used for playback with a television of a different standard. However, live recording and viewfinder playback are possible anywhere. Use the BN-V66RU/BN-V77RU battery packs and, to recharge them, the provided multivoltage AC power adapter/battery charger. (An appropriate conversion adapter may be necessary to accommodate different designs of AC outlets in different countries.)

# VIDEO CASSETTES

- The GR-S707E employs only the cassettes carrying the respective S VHS C and the VHS C marks.
- Recording onto prerecorded tapes automatically erases the previously recorded video and audio signals.
- An inverted cassette cannot be inserted.
- Do not load and unload the cassette repeatedly without allowing the tape to run at all. This will slacken the tape and thereby damage it.
- Make certain before loading the cassette that the tape is not slackened. If there is any slack, turn the gear on the cassette in the direction of the arrow to take up slack.
- The cassette is equipped with a safety tab to prevent accidental erasure. When the tab is removed, recording is impossible. If you wish to record on a cassette whose tab has been removed, use adhesive tape to reseal the slot.
- To avoid excessive exposure to dust and fingerprints, do not open the front tape cover.

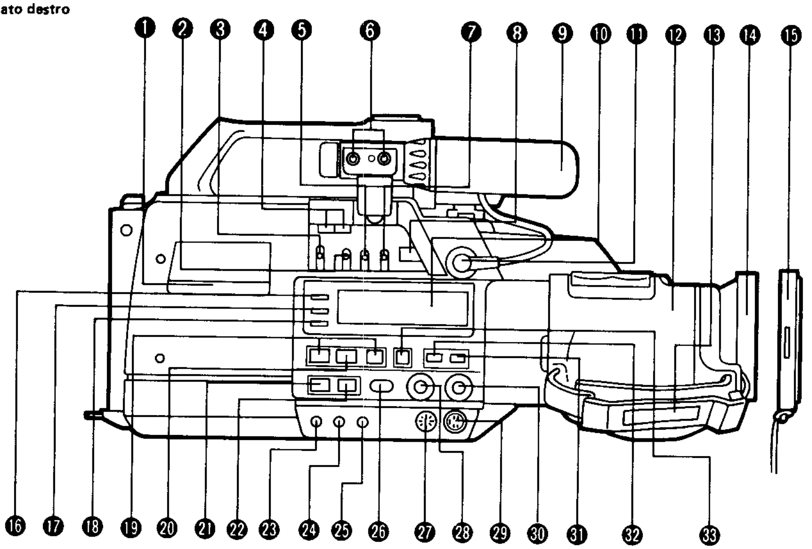


### Storage of cassettes

- Avoid exposing the cassettes to direct sunlight, Keep them away from heaters.
- Avoid storing the cassettes in humid or dusty places.
- Do not drop the cassettes. Do not expose them to violent vibrations or shocks.
- Do not expose the cassettes to strong magnetic fields (near a motor, transformer or magnet).
- Place the cassettes in cassette cases and position them vertically.

**Right side**

Côté doit
Rechte Seite
Vista del lado derecho
Rechterkant
Höger sida
Lato destro



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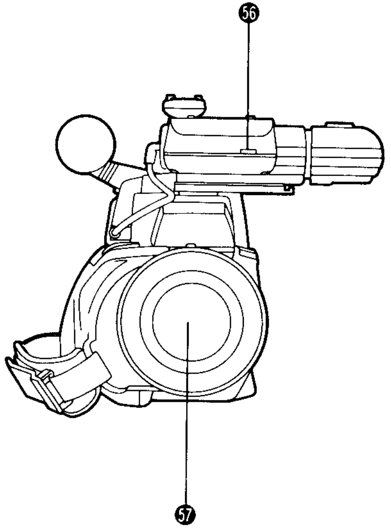
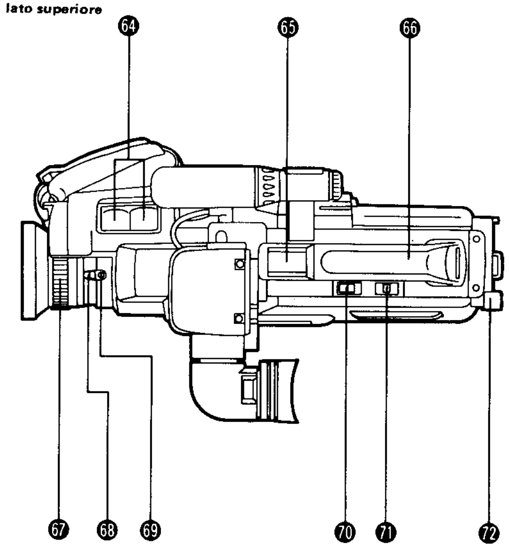
**Front view**

Vue de face
Vorderansicht
Vista frontal
Voorkant
Sedd framifrån
Vista di fronte



**Top view**

Vue de dessus
Draufsicht
Vista superior
Bovenkant
Sedd ovanifrån
Vista del lato superiore



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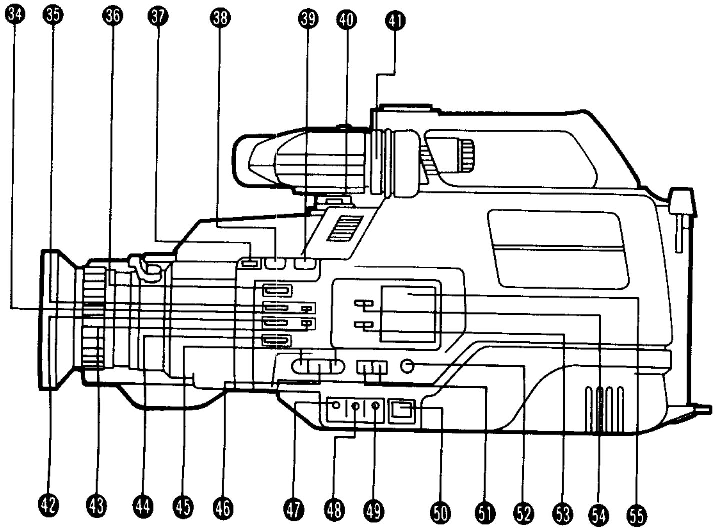
**Left side**

Côté gauche
Linke Seite
Visa del lado izquierdo
Linkerkant
Vänster sida
Lato sinistro



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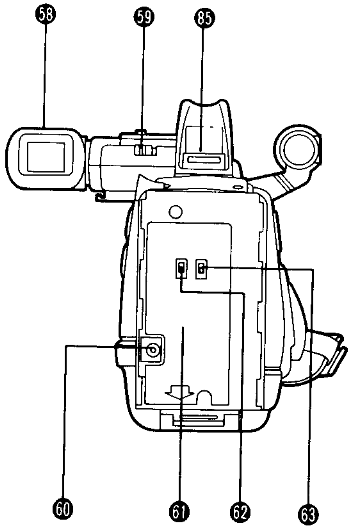
**Rear view**

Vue arrière
Rückansicht
Vista posterior
Achterkant
Sedd bakifrån
Vista del lato
posteriore



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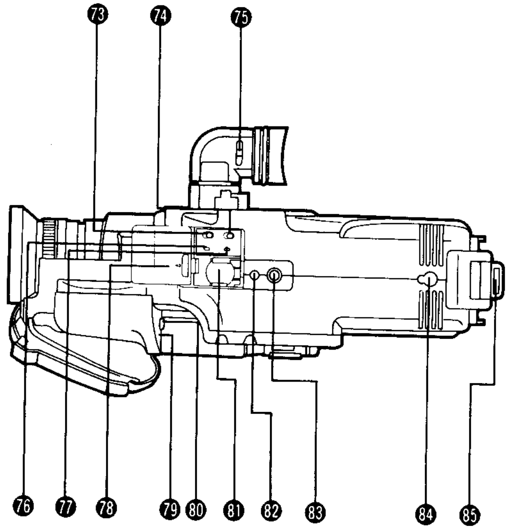
**Bottom view**

Vue de dessous
Unteransicht
Vista inferior
Onderkant
Sedd underifrån
Vista del lato
inferiore



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# CONTROLS AND CONNECTORS

**Refer to the diagrams on the front foldout page.**

## Right Side

① **Cassette holder**

② **DUBBING MODE switch**
Normally set to OFF. For making multi-generation dubs, set to ON.

③ **AUDIO OUT select switch**
Selects the audio track(s) to be listened to. This switch is effective for all audio output connectors (PHONES and AUDIO OUT).

NORM: to listen to the sound on the longitudial (normal) audio track.
MIX : to listen to the mixed sound on the Hi-Fi and normal audio tracks (for example, to enjoy Hi-Fi audio while at the same time listening to a narration dubbed onto the normal audio track).
Hi-Fi : to listen to the sound on the Hi-Fi audio track.

④ **TRACKING -/+ buttons**
If noise bars are seen, or Hi-Fi audio distortion is sensed during normal playback, minimize them by pressing either button. The tracking is reset to normal when both buttons are pressed at the same time, a cassette ejected, or the power turned off. In the fast-speed search mode, use these buttons to vary the search speed in either direction.

⑤ **REC MODE select switch**
Set to SP to record at standard tape speed. Set to LP to record at a slower tape speed, allowing an extended recording time of up to one hour with an SE-C30 videocassette.

⑥ **MIC jacks**
For the connection of external microphone.
MONO: Use to connect a monaural microphone.
STEREO: Use to connect a stereo microphone.

⑦ **ALC switch**
Set to AUTO to activate the automatic level control circuit for Hi-Fi audio. For manual control of the Hi-Fi audio recording level, set this switch to OFF and use the Hi-Fi REC LEVEL control knob ㉚ for adjustment.

⑧ **EDIT button**
When dubbing from the GR-S707E to a designated JVC VCR, pressing this button starts the GR-S707E for playback and, in synchronization with it, the VCR for recording.

⑨ **Stereo microphone**

⑩ **LCD panel for operation of recorder section.**
See page 11.

⑪ **Electronic viewfinder connector (EVF)**

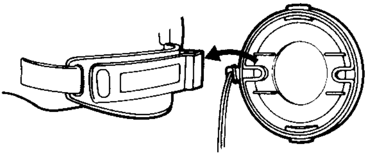
⑫ **Lens grip**

⑬ **Grip strap**

⑭ **Lens hood**
Standard 72 mm lens filters can be attached to the lens hood. With the lens hood removed, 52 mm filters can be attached.

⑮ **Lens cap (White balance cap)**
Can be secured by inserting its protrusion into the slot of the strap's buckle.
Can be used for the white balance lock. See page 25.

This keeps the lens cap from swinging during shooting.



⑯ **COUNTER/REMAIN button**
Selects the mode of the tape counter.

⑰ **Counter MEMORY button**
Press this button after resetting the counter to "+00M 00S" at a point on the tape to be located later. "MEMORY" appears on the LCD panel and the tape will then stop automatically at the counter reading of around "+00M 00S" during rewind or fast forward.

⑱ **Counter RESET button**
Press to reset the realtime tape counter to "+00M 00S".

⑲ **REW/FF (SHUTTLE SEARCH) buttons**
Press in the Stop mode for rewind or fast forward. Press in the Play mode for search at 7 times normal speed in either direction.

⑳ **PLAY button**
Press to play back the tape or cancel the Pause/Still mode. Also use this button together with the REC button ㉖ for recording, or with the AUDIO DUB button ㉜ for audio dubbing.

㉑ **PAUSE/STILL button**
Press to view a still picture during playback, or to stop playback temporarily. Each time this button is pressed, the still picture will advance slightly.

㉒ **STOP button**
Press to engage the Stop mode.

㉓ **PHONES jack**
Connect provided stereo earphones for monitoring the sound during recording.

㉔ **REMOTE jack**
For the connection of the optional RM-V15U remote control unit.

㉕ **AUDIO IN terminal**
Connect an audio source for mixing the microphone input when recording or audio dubbing.

㉖ **REC button**
Press to engage the Record Standby mode. To start recording, press the main recording start/stop button (80) or second recording start/stop button ㊲ .

㉗ **AV OUT terminal**
Using the AV/S output cable (provided), connect this terminal to another VCR for dubbing or editing (using the Master Edit Control function).

㉘ **Hi-Fi REC LEVEL BALANCE control knob**
This control adjusts the L and R channels relative to each other. Turn counterclockwise to boost the Hi-Fi audio left-channel recording level; clockwise to boost the right-channel recording level.

㉙ **[S] OUT terminal**
Using the S-VIDEO cable (optional), connect this terminal to another video recorder or monitor equipped with an S-VIDEO IN terminal for dubbing or monitoring.

㉚ **Hi-Fi REC LEVEL control knob**
Turn the control referring to the audio level indicators on the recorder section LCD panel ⑩ . When the indicators light up to or near 1 dB for the loudest input signal, the recording level is optimum.

㉛ **INSERT button**
Press for insert editing. See page 37.

㉜ **AUDIO DUB button**
Press this button together with the PLAY button ⑳ for audio dubbing. See page 38.

㉝ **SLOW button**
Press while in the Play mode to engage the Slow-Motion mode. The playback speed will slow down.

## Left Side

㉞ **White balance LOCK button**
Press while in the Auto White Balance mode to lock the automatically adjusted white balance setting.

㉟ **W.BALANCE select button**
The white balance setting is manually selectable using this button.

☼ : Halogen or tungsten lighting.
▭ : Fluoresent lighting.
☼ : Daylight.

㊱ **FOCUS button**
Press once for automatic focus, and press again to focus manually. "AUTO" or "MANU" appears respectively on the LCD panel (55) . See page 26 and 27 for manual focus indications.

㊲ **Second recording start/stop button (SUB TRIGGER)**
Functions exactly as the main recording start/stop button (60) . Use for low-angle shots when recording with the camera held low.

㊳ **FADER button**
To prepare a fade out of the picture to a black blank screen, press this button, then press either recording start/stop button (80) or ㊲ to start fading out. To fade in from a black blank screen, press this button, then press the recording start/stop button to start fading in.

㊴ **BLC button**
For backlight compensation, press this button. While it is being pressed, the iris is 1 – 2 f-stops wider than the automatic setting.

㊵ **Viewfinder holder**

㊶ **Electronic viewfinder**
For monitoring the scene being shot or the playback picture after recording. Several indicators are included, as well as the date/time or one-shot time if selected.

㊷ **DISPLAY ON/OFF button**
Press to record the displayed date, time, or date and time. Recording continues until this button is pressed again. Note that when the auto-date-record function has been chosen using the DISPLAY SELECT button ㊸ , the date will be briefly recorded regardless of this button's setting.

㊸ **DISPLAY SELECT button**
Press this button to select the date/time display. It cycles through the modes in the following order:

$$\begin{tikzcd}\text{Date/time display} \arrow[r] & \text{Date display} \arrow[r] & \text{Time display} \arrow[r] & \text{AUTO DATE record reserve} \arrow[r] & \text{On-screen display} \arrow[llll, bend left]\end{tikzcd}$$

The auto-date-record function automatically displays and records the date for 5 seconds upon turning on the power and beginning recording. Before recording begins, this mode is indicated in the viewfinder by "AUTO DATE".

㊹ **MONITOR button**
Press to engage the Rehearsal mode. See page 23.

㊺ **RETAKE R/F buttons**
Press either button (R for reverse, F for forward) while in the Recording Standby mode to reach the point where you wish a new recording to start. When the button is released, the camera will enter the Recording Standby mode.

㊻ **QUICK REVIEW button**
If you want to review the end of the previous recorded segment for confirmation, press this button from the Record Standby mode. See page 22.

㊼ **AGC button (Automatic Gain Control)**
Alternates between the AGC Auto and AGC Off (indicated in the viewfinder) modes. In the Auto mode, the AGC circuit will automatically start operation if illumination is insufficient.

**㊽ SHUTTER speed select button**
Press to switch the shutter speed. Each pressing selects the speeds in the following order.

→ Standard (1/50 second) → 1/1000 second
1/250 second ← 1/500 second ←

**㊾ Index button (VISS)**
Press while recording to put an index code on the tape for later reference. See page 28.

**㊿ FULL AUTO button**
Pressing this button puts the focus, iris, AGC, and white balance under automatic control and selects the standard shutter speed. Auto-focus can be cancelled by pressing the FOCUS button; auto white balance can be cancelled by pressing the W. BALANCE button ㉟ ; auto iris can be cancelled by pressing either MANU IRIS button (51) ; AGC can be cancelled by pressing AGC button ㊼ to off, the high-speed shutter can be selected by pressing the SHUTTER speed select button ㊽ . Pressing the FULL AUTO button in the Full-auto mode has no effect.

**(51) APERTURE-MANU IRIS -/+ buttons**
The iris setting can be compensated (or varied) allowing more image expression. Press "+" button to overexpose the picture, "-" button to underexpose the picture. Each pressing of the button opens (closes) the aperture.

**(52) AUTO/MANUAL button**
Press to enter the Iris Lock mode for maintaining the current iris setting. The Iris Lock mode can be cancelled by pressing the AUTO/MANUAL button again.

**(53) INTERVAL button**
Press while in the Recording Standby mode for self-timer recording. Initial setting is 15 seconds. Available time settings are 15 sec., 30 sec., 1 min., and 3 min. Pressing the button again after 3-min. setting, the Self-Timer mode is cancelled. Use this button in combination with the REC TIME button (54) for time-lapse recording; select the interval with the INTERVAL button and the recording time with the REC TIME button. Modes and settings will be indicated on the LCD for camera operation.

**(54) REC TIME button**
Press while in the Recording Standby mode for animation recording. Initial setting is 1/4 seconds. Available time settings are 1/4 sec., 1/2 sec., and 1 sec. Use this button in combination with the INTERVAL button for time-lapse recording.

**(55) LCD panel for operation of camera section**
See page 12.

## Front View

**(56) Tally lamp**
Lights to show when recording is in progress, if the TALLY switch (59) is in the ON position.

**(57) 8 : 1 power zoom lens**
F/1.2, f = 9 – 72 mm, filter diameter: 52 mm.

## Rear View

**(58) Eye cup**

**(59) TALLY ON/OFF switch**
Set to ON if tally indication is required.

**(60) DC INPUT terminal**
For operation with external power supply via the AC power adapter or car battery adapter.

**(61) Power unit mount**

**(62) S-VHS recording mode select switch**
Set to ON-AUTO to automatically select (detect) the mode according to an inserted cassette (S-VHS mode for S-VHS-C cassette, VHS mode for VHS-C cassette); set to OFF to record in the VHS mode regardless of type of cassette.

**(63) VIDEO OUT switch**
Select the signal output via AV OUT connector ㉗ .

Y/C: Set to this position to supply an S-VHS signal (Y/C separated video signals) to a component connected to the AV OUT connector.

CVBS: Set to this position to supply an ordinary video signal (composite video signal) to a component connected to the AV OUT connector.

## Top View

**(64) Power zoom buttons (W/T)**
For automatic zooming at slow speed, press lightly. For regular speed zooming, press firmly. "T" is for telephoto zooming and "W" is for wide-angle zooming.

**(65) Accessory shoe**
Use this accessory shoe to attach an optional shoe adapter which allows attaching a variety of optional accessories.

**(66) Carrying handle**

**(67) Focus ring**

**(68) Manual zoom lever**
Use to turn the zoom ring manually.

**(69) Macro button**
Turn the zoom ring while pressing this button to enter Macro Shooting mode.

**(70) POWER switch**
Slide to turn the power on. The Stop indicator appears on the LCD panel. Slide again to switch off power.

**(71) EJECT switch**
Slide to open the cassette holder.

**(72) BATTERY RELEASE lever**
Press down till it locks in place to remove the attached battery.

## Bottom View

**(73) ONE-SHOT TIME COUNTER switch**
Set to ON to obtain a one-shot time counter indication on the viewfinder screen.

**(74) ALARM switch**
Set to ON to activate the trigger alarm system. An electronic alarm will beep once when the recording start/stop button is pressed to begin recording, and twice when it is pressed for record pause. This alarm helps prevent recording errors.

**(75) Dioptric adjustment control**
Adjusts the viewfinder lens to suit the operator's eyesight.

**(76) DATE/TIME SELECT button**
Use to select the portion of the clock or date settings to be changed. Cycles through the day month, year, hour, and minute settings. To end adjustment, press once after selecting the minute portion.

**(77) DATE/TIME SET button**
Use to set the built-in clock and date function.

**(78) Clock battery compartment cover**

**(79) Thumb rest**
Place your thumb on this grooved area next to the recording start/stop switch between switch operations.

**(80) Recording start/stop button**
Press this button in the Recording Standby mode to start recording. Pressing it again re-engages the Recording Standby mode.

**(81) Clock battery compartment**
Holds the lithium battery (CR2025 or its equivalent) that powers the clock for date and time function. See page 31.

**(82) Forward stud hole**

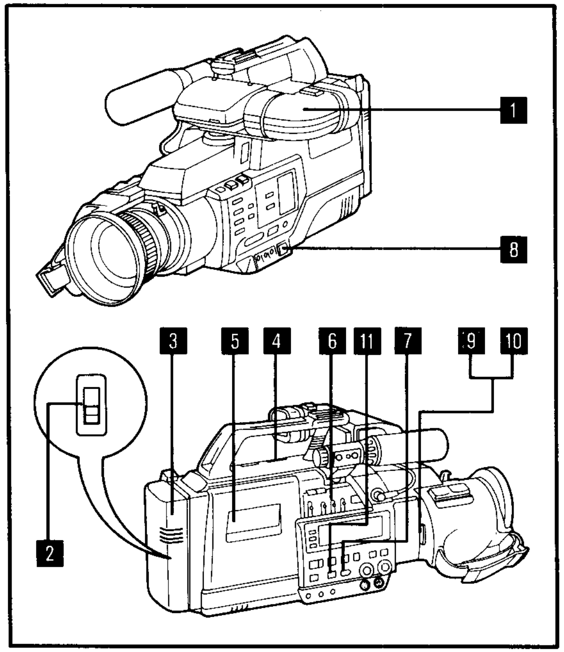
**(83) Tripod mounting socket**

**(84) Rear stud hole**

**(85) Eyelet for attaching the shoulder strap**

# LIVE RECORDING HAS NEVER BEEN SO EASY

## Full-auto outdoor recording procedure

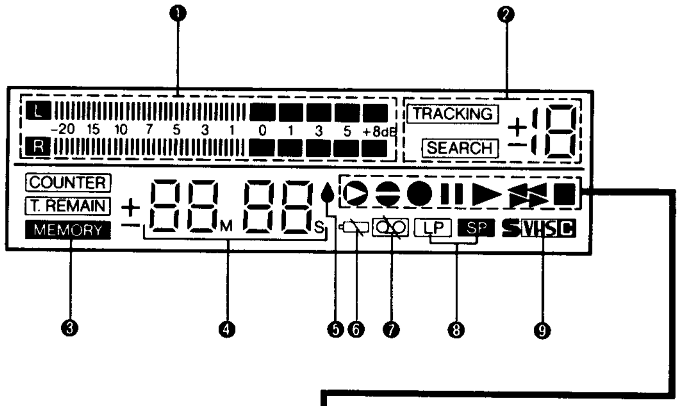


1. Adjust the viewfinder.
   (Refer to page 18 for details.)
2. Set the S-VHS switch.
   (Refer to page 15 for details.)
3. Attach the battery pack.
   (Refer to page 19 for details.)
4. Slide Power switch to ON.
5. Pop in a cassette.
   (Refer to page 20 for details.)
6. Set tape speed to SP or LP.
7. Press REC standby button.
8. Press FULL AUTO button.
9. Shoot
   (press recording start/stop button).
10. Stop recording
    (press recording start/stop button).
11. To end recording, press STOP button.
    - To play back the recorded tape, press REW button and then PLAY.

---

# LCD INDICATIONS

## LCD Panel For Operation Of Recorder Section



❶ **Hi-Fi Audio level indicators**

❷ **Tracking/Search mode indicator**
When either tracking button is pressed, "TRACKING" appears and the digit shows from -15 to +15. See pages 32 and 33.
While the variable-speed search is in operation, "SEARCH" appears and the digital readout shows 1, 3, 5, and 7.

❸ **Counter memory indicator**
Appears when the MEMORY button is pressed.

❹ **Tape counter**
Shows tape time in minutes and seconds in the COUNTER mode, and remaining tape time in the T. REMAIN mode.

❺ **Condensation warning**
Appears when excessive moisture condensation occurs inside the unit.

❻ **Battery warning**
Flashes when the battery power becomes insufficient for normal operation.

❼ **Cassette warning mark**
Blinks if no cassette is loaded, or if a cassette with its safety tab removed is loaded.

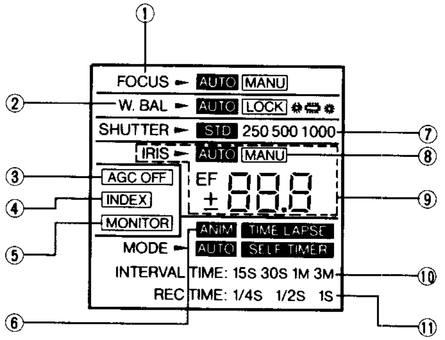
❽ **Recording speed indicator**

❾ **S-VHS mode indicator**
Lights when the S-VHS recording mode select switch ⓬ is set to ON-AUTO and a cassette marked S-VHS-C is inserted for recording.

## Symbolic operation mode indicator

| RECORD | RECORD STANDBY | PLAY | PAUSE | SHUTTLE SEARCH | | FAST FORWARD | REWIND |
|---|---|---|---|---|---|---|---|
| | | | | FORWARD | REVERSE | | |
| ● | ●❚❚ | ▶ | ❚❚ | ▶▶▶ | ▶◀◀ | ▶▶ | ◀◀ |
| INSERT EDITING | AUDIO DUBBING | EDITING | STOP | FRAME ADVANCE | SLOW | RETAKE RWD | RETAKE FF |
| ⊳ | ⊖ | ▶<br>Blinking | ■ | ❚❚▶ | ❚❚▶ | ▶◀◀<br>Blinking | ▶▶▶<br>Blinking |

## LCD Panel For Operation Of Camera Section



① **Focus mode indicator**
Shows the selected Auto Focus or Manual Focus mode.

② **White balance mode indicator**
AUTO, LOCK, or manual settings for tungsten and halogen light ✲ , fluorescent light ▤ , or daylight ☼ .

③ **AGC OFF indicator**
Appears when the AGC button is pressed to OFF. No indication appears in the AGC Auto mode.

④ **Index marking indicator**
Blinks when an index code is being recorded manually by pressing the VISS button.

⑤ **Rehearsal mode indicator**
Appears when the MONITOR button is pressed for rehearsing shots without recording on the tape.

⑥ **Camera mode indicator**
AUTO for normal continuous recording, ANIM for animation recording (engaged by pressing the REC TIME button), TIME LAPSE for time-lapse recording (engaged by pressing the REC TIME and INTERVAL buttons), SELF TIMER for self-timer recording (engaged by pressing the INTERVAL button).

⑦ **Shutter speed indicator**
STD for standard 1/50 sec., 250 for 1/250 sec., 500 for 1/500 sec., and 1000 for 1/1000 sec.

⑧ **Iris mode indicator**
Shows the selected Auto Iris (Aperture) or Manual Iris mode.

⑨ **Iris control indicator**
In the Auto Iris mode (engaged by pressing the IRIS -/+ buttons simultaneously), this shows iris compensation values from -14 to +14, such as "EF +2".
In the Iris Lock mode (engaged by pressing the AUTO/MANUAL button while in the Manual Iris mode), this shows an f-stop number corresponding to the current setting, such as F1.4. Available indications include F1.2, F1.4, F2, F2.8, F4, F5.6, F8, F11, and F16.

⑩ **Interval time indicator**
Shows a selected interval time for self-timer or time-lapse recording.

⑪ **Recording time indicator**
Shows a selected recording time for animation or time-lapse recording.

# VIEWFINDER INDICATIONS

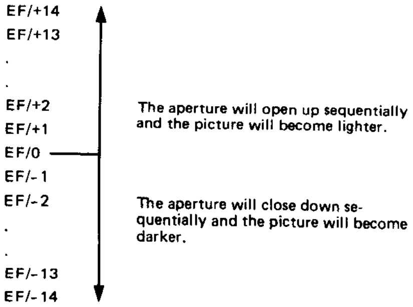
The viewfinder provides comprehensive indications that you need while shooting.

## On-screen display

The viewfinder indications can also be displayed on the screen of a monitor connected to the GR-S707E.

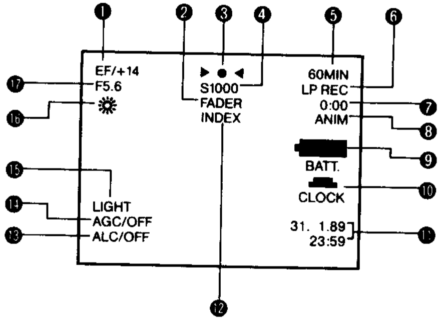
- Connect the VideoMovie to a video monitor. Press DISPLAY SELECT to display the On-screen Display mode. (Refer to "RECORDING THE DATE/TIME" on page 31.)
- The on-screen display on the connected monitor's screen is available only in Rehearsal mode.

❶ **Iris indication**
No indication: Manual Iris mode
In the Auto Iris mode (engaged by pressing the FULL AUTO button or AUTO/MANUAL button), the following indications are shown as the aperture compensation is manually applied by pressing either the APERTURE "-" or "+" button.



The aperture will open up sequentially and the picture will become lighter.

The aperture will close down sequentially and the picture will become darker.



❷ **Fader indication**
FADER: Appears when the FADER button is pressed to "reserve" a fade-in or fade-out.

❸ **Focus indication**
In the Manual Focus mode, the following indication appears.
▶ : Focus behind subject. Turn the focus ring clockwise until ● appears.
● : Correct focus.
◀ : Focus in front of subject. Turn the focus ring counterclockwise until ● appears.
▶●◀: Low-contrast warning. Focus detection is not possible. Estimate the subject distance and set the focus ring referring to the distance scale on it.

❹ **Shutter speed indication**
No indication: Standard shutter speed (1/50 sec.)
S1000: 1/1000 sec.
S500: 1/500 sec.
S250: 1/250 sec.

❺ **Remaining tape time indication**
When a cassette is inserted, "—" blinks while the time is being detected.
Available indications are 60, 50, 40, 30, 20, 15, 10, 5, 4, 3, 2, 1, and 0 MIN, and as a tape-end warning, 2, 1 and 0 MIN will blink.

❻ **Recording status indicators**
— : Recording Standby mode in SP.
LP — : Recording Standby mode in LP.
REC : Recording is in progress in SP mode.
LP REC : Recording is in progress in LP mode.

❼ **One-shot time counter**
Shows the duration of one shot in minutes and seconds, if the ONE-SHOT TIME COUNTER switch is set to ON. Each time the trigger is pressed for the start of recording, the counter is reset to "0:00" and counts up in one-second steps until the trigger is pressed again for record pause.

❽ **Cassette warning and mode indicators**
CASSETTE : Blinks to warn that no cassette or a cassette without safety tab is inserted.
ANIM : Blinks while in the Animation mode.
T.LAPSE : Blinks while in the Time-Lapse mode.
SELF. T : Blinks while in the Self-Timer mode.

❾ **Battery warning**
Blinks when the battery power is insufficient for normal operation.

❿ **Lithium battery warning**
Blinks when the lithium battery is not in place or exhausted. In this condition, no date/time function is available.

⓫ **Date/time display**

⓬ **Index marking indicator**
Blinks while an index code is being recorded.

⓭ **ALC indication**
ALC/OFF : The ALC button is in the OFF position. The Hi-Fi audio recording level must be set manually.
No indication : The Hi-Fi audio recording level is automatically controlled.

⓮ **AGC indication**
AGC/OFF : The AGC button is in the OFF position.
No indication : The AGC is in operation for automatic compensation for insufficient illumination.

⓯ **Insufficient light warning**
"LIGHT" appears and blinks when illumination is insufficient for normal operation.

⓰ **White balance indication**
No indication : Auto White Balance mode
W.B. LOCK : Indicates that the automatically white balance setting adjusted is locked. The White Balance Lock mode is engaged by pressing the W.BALANCE LOCK button.
☼ : Indicates that the preset white balance setting for daylight (5500 K) is selected by pressing the W. BALANCE button.
▤ : Indicates that the preset setting for fluorescent light (4500 K) is selected.
✲ : Indicates that the preset setting for halogen or tungsten light (3200 K) is selected.

⓱ **F-stop number indication**
No indication: Auto Iris mode.
When the AUTO/MANUAL button is pressed in the Auto Iris mode, the f-stop number corresponding to the current iris setting is displayed:
F1.2, F1.4, F2, F2.8, F4, F5.6, F8, F11, and F16

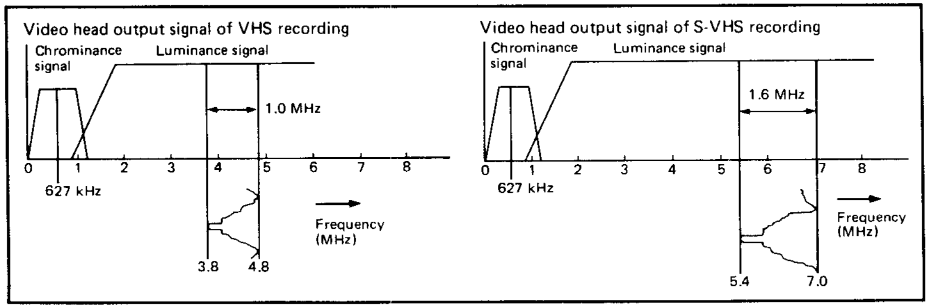
# FOR A BETTER UNDERSTANDING OF S-VHS AND VHS

## S-VHS vs. VHS

- VHS is the world's most popular video format. If you already own a VCR, most likely it is a VHS machine.
- **S-VHS is a new video sub-format based on VHS. It offers superior picture quality with increased horizontal resolution by shifting the FM carrier frequency of the luminance signal from the conventional 3.8 – 4.8 MHz range to a higher one of 5.4 to 7 MHz.**

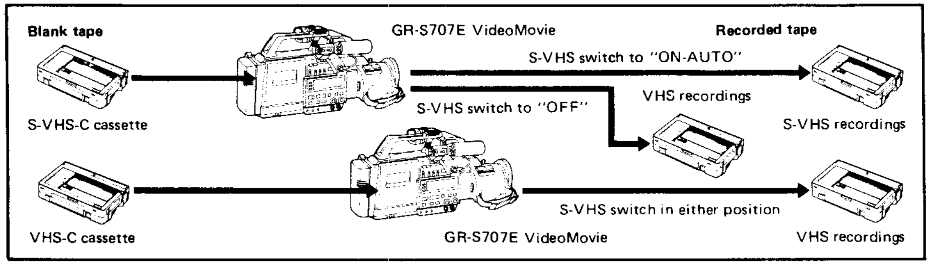
- The GR-S707E is equipped for recording and playback in both the S-VHS and VHS formats. Therefore, you can still play back your VHS software programs and previously recorded family recordings.
- You can switch to the world of S-VHS for your new recordings to enjoy breathtaking picture quality. Or to exchange recordings with someone whose VCR is not S-VHS, simply record in the VHS mode, whether with a regular VHS cassette or an S-VHS cassette.

**Recording Signal Spectrum**

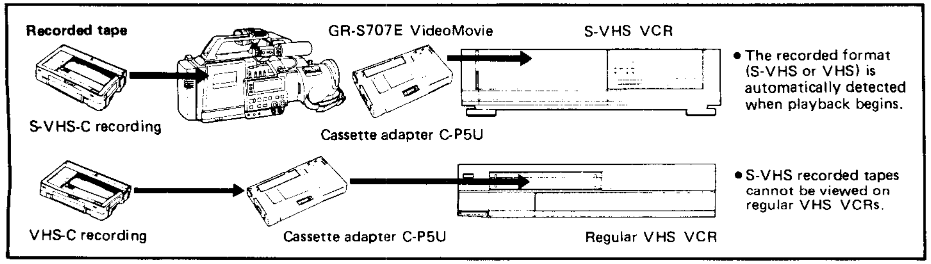


### Compatibility between S-VHS and VHS

**Recording**

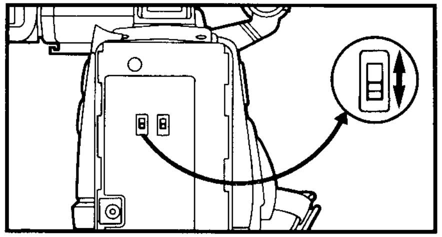

Blank tape
GR-S707E VideoMovie
Recorded tape
S-VHS switch to "ON-AUTO"
VHS recordings
S-VHS switch to "OFF"
S-VHS-C cassette
S-VHS recordings
S-VHS switch in either position
VHS-C cassette
GR-S707E VideoMovie
VHS recordings

**Playback**


Recorded tape
GR-S707E VideoMovie
S-VHS VCR
S-VHS-C recording
Cassette adapter C-P5U
VHS-C recording
Cassette adapter C-P5U
Regular VHS VCR

- The recorded format (S-VHS or VHS) is automatically detected when playback begins.
- S-VHS recorded tapes cannot be viewed on regular VHS VCRs.

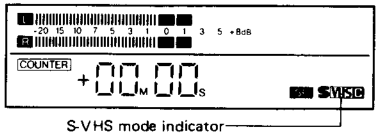
### Selecting the S-VHS/VHS mode



1. Set the mode select switch to "ON-AUTO". The GR-S707E automatically detects the type of cassette so that the appropriate mode is automatically selected.
   With a cassette marked "S-VHS-C": S-VHS mode (The S-VHS mode indicator lights.)
   With a cassette marked "VHS-C": VHS mode
2. Set this switch to "OFF". The VHS mode always remains in effect, regardless of the cassette used.

### S-VHS mode indicator

The S-VHS mode indicator remains lit while the GR-S707E is in the S-VHS mode. (When the S-VHS mode select switch is set to "ON-AUTO" and an S-VHS-C cassette is inserted.) It also remains lit when playing back S-VHS-C programs recorded on an S-VHS cassette.


L
-20 15 10 7 5 3 1 0 1 3 5 +8dB
R
COUNTER
+00M00S
S
S-VHS mode indicator

**Note:**
With the switch set to "ON-AUTO", in playback, if regular VHS signals are recorded on an S-VHS-C cassette, the GR-S707E switches to the VHS mode automatically. At the same time, the S-VHS mode indicator goes off.

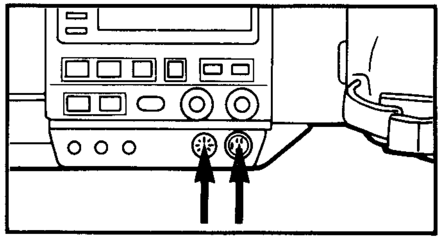
### How to take best advantage of S-VHS pictures

For flexibility, the GR-S707E has an 8-pin terminal, and an S-VIDEO terminal.
The S-VHS signal is separated into Y and C (luminance and chrominance) signals, while the regular video signal is a composite video signal in which the luminance and chrominance signal are mixed.
The 4-pin [S] OUT terminal ㉙ is exclusively for the separated Y/C signals.
The 8-pin terminal is an AV OUT terminal which delivers either the seperated Y/C signal or the composite video signal depending on the setting of VIDEO OUT switch (63).

### Using a television with S-VIDEO input

**If your television is equipped with an S-VIDEO input (separated Y/C signals) terminal, this is an ideal way to enjoy the best possible S-VHS picture, because no interference occurs between the luminance and chrominance signals.**
**Connect the S-OUT terminal of the GR-S707E to the S-VIDEO IN terminal of your television. To view video cassettes with this setup, set the TV to the AV** mode. (It is not necessary to set the TV to channel 36.)

### S-OUT connector



When using the S-OUT connector, use the AV OUT connector in combination with it. Y/C separated video signals are delivered from the S-OUT terminal and accompanied audio signals from the AV OUT connector. For detailed connection, see page 34.

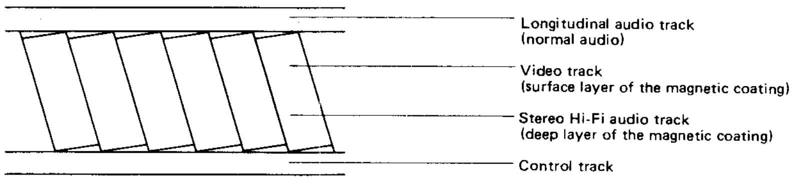
# INFORMATION ON THE GR-S707E'S AUDIO SYSTEM

### Hi-Fi and normal audio

To provide true Hi-Fi audio accompaniment to Super VHS entertainment, the GR-S707E employs a unique audio recording system. Hi-fi audio signals (2-channel) are recorded deep into the tape's magnetic coating, and the video signal is recorded on top of the audio signals in a shallower layer. At the same time, another audio head records normal audio signals (monaural) onto the usual longitudinal audio track. Since this longitudinal audio track is exactly the same as on non-Hi-Fi VHS tapes, audio signals recorded on tapes with the GR-S707E can be played back on other VHS machines, and vice versa.

**CAUTION:**
- The Hi-Fi soundtrack recorded with the GR-S707E cannot be reproduced with video equipment other than Hi-Fi VHS.
- Tapes recorded with a conventional stereo video recorder produce monaural sound when played back with the GR-S707E.

**Tape pattern recorded with GR-S707E**



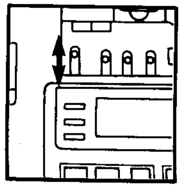
Hi-fi audio recording and reproduction are available only from the Hi-Fi audio track while the longitudinal audio track provides normal audio.

**The Hi-Fi and normal soundtracks are recorded simultaneously.**

**The audio recording options are as follows:**

| Mike | Lontigudinal audio track | Hi-Fi audio track | |
|---|---|---|---|
| | | L | R |
| Provided mike | L + R | L | R |
| Mono mike connected to "STEREO" connector | MONO/L | MONO/L | No audio |
| Mono mike connected to "MONO" connector | MONO/R | MONO/R | MONO/R |
| Stereo mike connected to "STEREO" connector | L + R | L | R |

**When monitoring audio during playback**



Set the AUDIO OUT mode select switch according to the audio track you wish to listen to. (Also effective when monitoring with the provided stereo earphones connected to PHONES jack.)

**NORM**: To listen to the sound recorded on the longitudinal (normal) audio track.
**MIX** : To listen to the sound recorded on both Hi-Fi and longitudinal audio tracks. (mixed audio).
**Hi-Fi** : To listen to the sound recorded on the Hi-Fi audio track.

- When playing back a tape containing the same soundtrack on both hi-fi and normal audio tracks, a slight time lag is sensed between the two sound tracks, probably with some distortion, in the MIX position. Therefore, in such a case, use the NORM or Hi-Fi position.

### Hi-Fi Recording Level Control

The GR-S707E features the Hi-Fi VHS system for quality audio recording. The recording level is automatically adjusted in the ALC (Automatic Level Control) mode ❼ . When you desire to adjust the level manually, proceed as follows.

**1** Set the ALC switch ❼ to OFF. "ALC/OFF" appears on the viewfinder screen.

**2** Turn the Hi-Fi REC LEVEL control knob ㉚ to adjust to your preferred level while referring to the Hi-Fi audio level indicators.

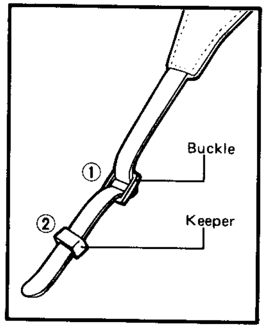
- To obtain an optimum setting for the recording level, adjust the control knob until the black square peak indicators, which appear when the loudest signal is being received, are aligned with "0" on the LCD's printed scale.
- If the recording level is too high, excessive noise will result; if too low, distortion will result.
- Be sure to set the ALC switch back to AUTO for automatic ALC adjustment.
- Ordinarily set the control knob to its centre position.

**3** Turn the Hi-Fi REC LEVEL BALANCE control knob ㉘ to adjust the balance between the L and R channels to your preference for recording. Refer to the Hi-Fi audio level indicators while adjusting.
- Ordinarily set the control knob to its centre position.

# BASIC PREPARATIONS

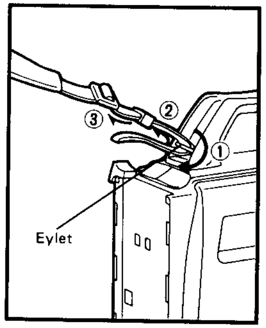
### Attaching the shoulder strap

**1**



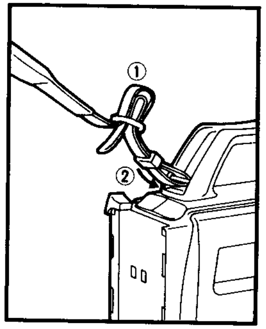
Slide the strap buckle and strap keeper off the end of the strap. Replace them on the strap: the buckle first ①, then the keeper ②.

**2**



Loop the end of the strap over the top of the eyelet ①, then, folding it back, thread the end of the strap first through the keeper ② , then the buckle ③ . Making sure that the strap is not twisted, repeat the above procedures to attach the other end of the strap to the other eyelet.

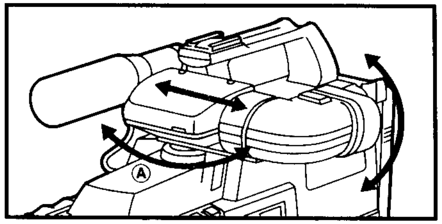
**3**



Adjust the shouler strap to the desired length ① , then slide both keepers up snug against the eyelets to prevent the strap from slipping ② .

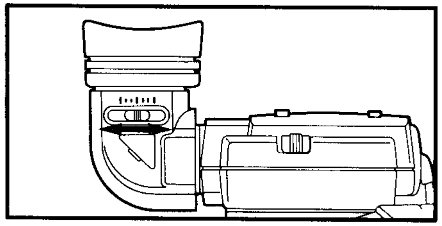
## Adjusting the Viewfinder

**Positioning the viewfinder**



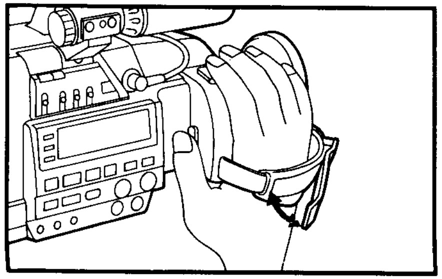
The viewfinder can be positioned for best viewability. It can be slid left and right, rotated 90° and tilted 180°. The horizontal, outer-most position allows left-eye monitoring. When storing or carrying the camera, rotate and keep the viewfinder at position Ⓐ.

**Diopter adjustment**



The viewfinder lens can be adjusted to suit the operator's eyesight by moving the dioptric adjustment control located underneath the eye cup.

### Adjusting the grip strap

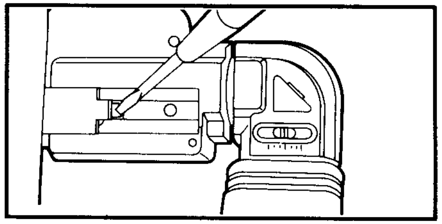


① Separate the Velcro strip to expand the loop.
② Pass your right hand through the loop and grasp the lens grip. Adjust the length of the strap to suit your hand size and refasten the Velcro strip.

## Removing and Mounting the Viewfinder

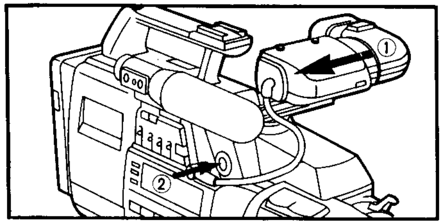
Switch off power before removing or mounting viewfinder.

**Removing the viewfinder**



Slide the viewfinder holder out until it is engaged by the latch on the mounting shoe. Push the catch on the viewfinder holder with a small pointed object (like a ballpoint pen) and pull out the viewfinder.

**Mounting the viewfinder**



① Slide the viewfinder holder into the mounting shoe, until it moves past the latch.
② Connect the viewfinder cable to the viewfinder cable connector.

# POWER SUPPLY SYSTEM

The convenient 3-way power supply system gives you a choice of the most appropriate power supply unit, depending on the application.

**CAUTION**
- ●No function is available without power supply.
- ●Do not use any power supply other than specified.
- ●Never attempt to use these power supply units with any equipment other than the VideoMovie.

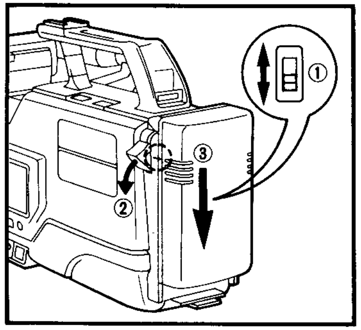
### Where AC power is not available

Use the battery packs:
- ●BN-V66RU (High-capacity)
- ●BN-V77RU (Super-high-capacity)

**Note:**
The battery pack has been kept in the uncharged state for shipment. Therefore, before use, be sure to charge it. See page 40.

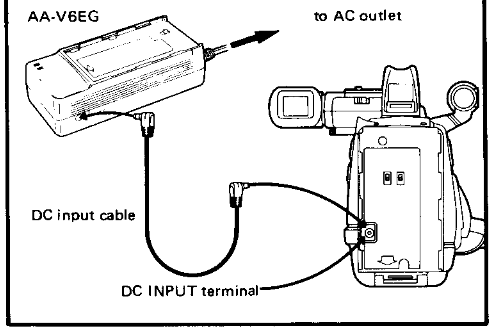
**Attaching the Battery Pack**
① Set the S-VHS switch. (See page 15.)
② Pull down the battery pack release lever.
③ Align the battery pack over the outline in the battery pack mount, and slide the battery pack in the direction of the arrow until the lever moves up to lock the battery securely in place.

To remove the battery pack, pull down the battery pack release lever and slide out the battery.



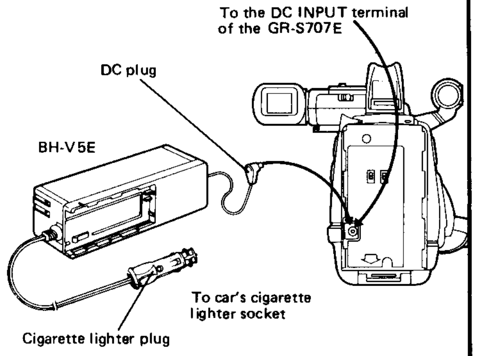
### With AC power

Use the provided AA-V6EG AC power adapter/battery charger.



### In a car

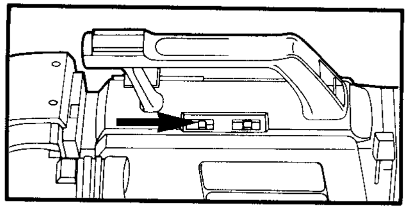
Use the optional BH-V5E car battery charger.
- ●Leave the car's engine idling when using the car battery. (For use with 12 V negative-grounded cars only.)


To the DC INPUT terminal of the GR-S707E
DC plug
BH-V5E
To car's cigarette lighter socket
Cigarette lighter plug

# LOADING AND UNLOADING A VIDEO CASSETTE

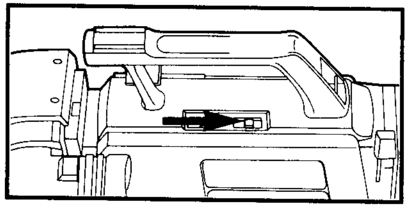
## LOADING

**1**



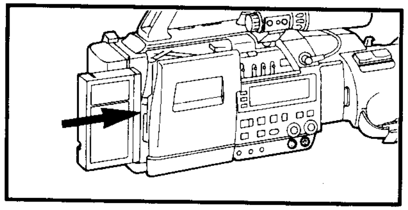
Slide the POWER switch to turn power on.

**2**



Open the cassette holder by sliding the EJECT switch.

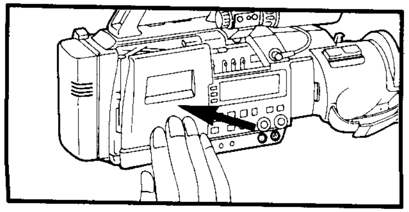
**3**



Insert the cassette with its printed arrow facing outward and pointing forward.

Ensure that tape is not slack inside the cassette, then load the cassette correctly. See page 5.

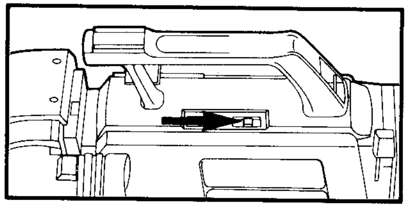
**4**



Close the cassette holder by pushing its centre area.

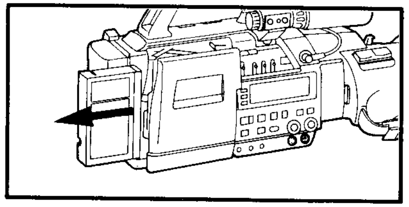
## UNLOADING

**1**



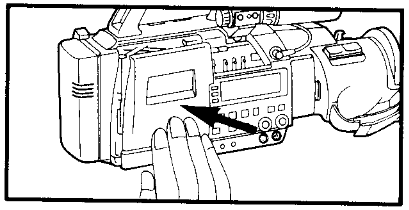
Make sure the unit is in the Stop mode. Slide the EJECT switch. The cassette holder will open.

**2**



Remove the cassette.

**3**



Close the cassette holder by pushing its centre area.
- When not in use, switch off power.

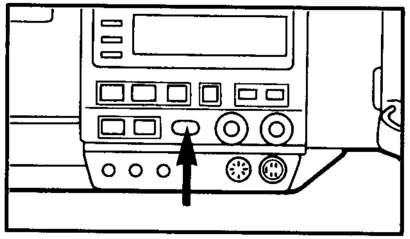
**Note:**
- Do not repeat loading and unloading of the cassette without running the tape, as this will slacken the tape, causing tape damage.

# FULL-AUTO RECORDING OPERATION

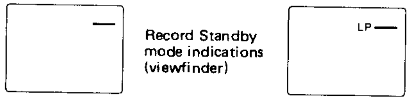
**1**
- Slide the POWER switch to turn the power on.
- Set the S-VHS mode select switch to "ON-AUTO" (for automatic detection of S-VHS or VHS tape, see page 15) or to "OFF" (for VHS recording, regardless of type of tape used).
- Set the SP/LP recording mode select switch as required.
- Set the ALC switch to AUTO.
- If you prefer to monitor the audio during recording, connect the provided stereo earphones.
- Insert a video cassette correctly (with its safety tab in place).

**Note:**
Only S-VHS tapes can be used to make S-VHS recordings.

**2**



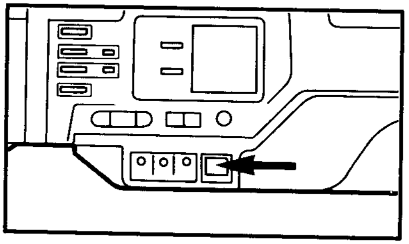
Press the REC button. The unit enters the Record Standby mode. (The aimed-at scene will appear on the viewfinder screen.)



Record Standby mode indications (viewfinder)

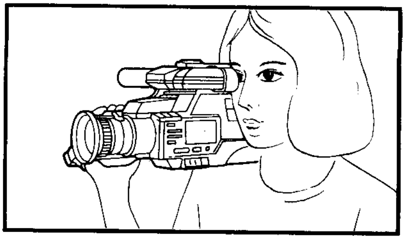
Check the viewfinder and LCD indications. See pages 11 through 13.

**3**



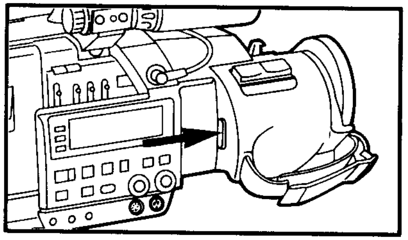
Press the FULL AUTO button.
- In the FULL AUTO mode, W.BALANCE, SHUTTER, Iris and/or AGC indications do not appear on the viewfinder screen.

**4**



Determine the composition by referring to the viewfinder image. For zooming, see page 27.

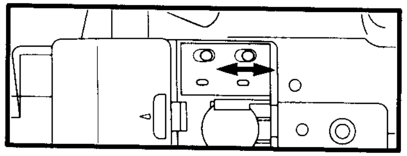
**5**



Press the recording start/stop button.
- This causes REC or LP REC to appear, showing on the viewfinder screen that recording is actually taking place.

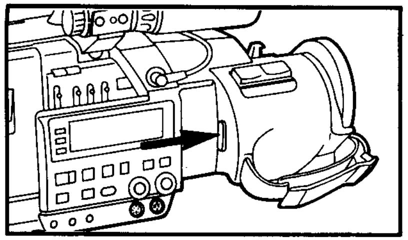
- During recording, the tally lamp lights continuously unless it is turned off.

### Trigger alarm system



When the ALARM switch is set to ON, an electronic alarm beeps when the Recording start/stop button is pressed to begin recording. The electronic alarm beeps twice when the Recording start/stop button is pressed for record pause. This alarm helps prevent recording errors.

6

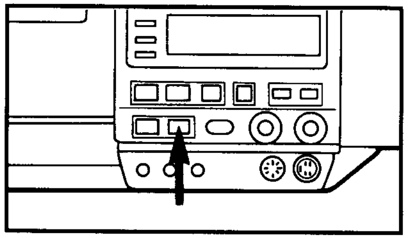


To stop recording temporarily, press the recording start/stop button once again.

7 To restart recording, press the recording start/stop button.

- For a longer pause, slide the POWER switch to OFF to save power.
- If the Recording Standby mode continues for longer than about 5 minutes, the unit switches itself off automatically. To restart recording, turn the power on and press the recording start/stop button. This makes clean assembled recordings possible even after a long pause.

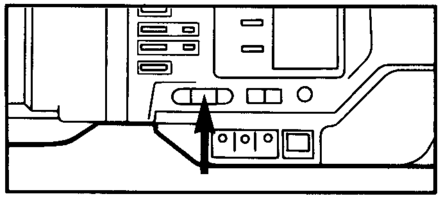
8



To end recording, press the STOP button.

- After making sure that the tape has stopped, slide the POWER switch to OFF.

## Quick Review function



- If you want to review the end of the last recorded segment for confirmation, press the QUICK REVIEW button from the Record Standby mode; the tape will be rewound for about 2 seconds of program time and played back automatically for this section, after which it will stop in the Recording Standby mode in readiness for the next shot.

**Note:**

- Distortion might occur when playback starts. This is normal.

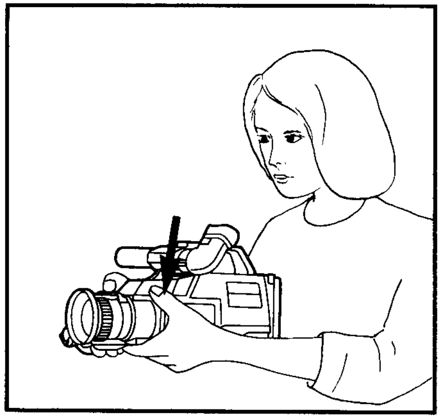
## Assemble recording

- Repeating steps 6 and 7 produces assemble recordings. In playback, the picture may be slightly distorted at the point between separate takes. This is not due to any defect of the unit.
- If recording is restarted from the Stop mode, a few frames of the previously recorded picture is replaced with a new recording. To avoid this, follow the techniques described in "Assemble Recording Technique" on page 24.

## Record Standby mode save function

This function is another useful convenience for further saving battery power when intervals between shots are rather long. While in Record Standby mode, slide the POWER switch to OFF, then after composing the shot, slide only the POWER switch to ON again and the Record or Recording Standby mode is restored automatically.

## Second recording start/stop button (SUB TRIGGER) – for low-angle shots



When you shoot scenes from a low angle, use the second recording start/stop button for better viewability and securer positioning of the camera.

## Rehearsal

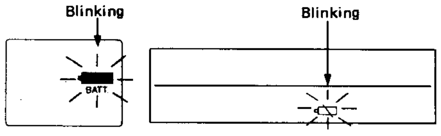
If you wish to rehearse shooting angles, compose scenes, etc., without actually recording on the tape, you can perform rehearsal by simply pressing the MONITOR button. The scene will appear on the viewfinder screen.

- To disengage the Rehearsal mode, press the STOP button again.
- The power save circuit does not function during rehearsal. (For power save function, see page 24.)

## Warnings

| Mode/Status | Viewfinder | LCD |
|---|---|---|
| **Battery warning** | ▬ BATT.<br>Blinking | ▭ Blinking |
| **Lithium clock battery warning** | ▬ CLOCK<br>Blinking | |
| **Condensation warning** | | 💧<br>Blinking |
| **Low-light warning** | LIGHT<br>Blinking | |
| Low-Contrast warning (AUTO/MANUAL) | ▶●◀<br>Blinking | |
| **Tape-end warning** | 2 MIN<br>Blinking<br>(2, 1, 0 MIN) | |

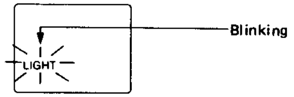
### Battery warning



Viewfinder	Recorder section LCD

- When the battery's power is coming to an end, a battery warning indication appears both in the viewfinder and the Recorder section LCD. Replace the battery pack with a fully charged one.
- After these indications appear, the power turns off automatically. In this state, however, sliding the POWER switch to ON while holding the EJECT switch slid back, turns the power on and ejects the cassette.

### Low-light warning



- If the blinking "LIGHT" indicator appears on the viewfinder screen, the amount of light is insufficient. Increase the lighting.

# POWER SAVE AND TAPE PROTECTION CIRCUIT

- To save power, the GR-S707E switches itself off automatically in the following situations:
  (1) When left for longer than 5 minutes in the Stop mode.
  (2) When left for longer than 5 minutes in the Recording Standby (Record-Pause) mode.
- To protect the tape, the GR-S707E releases tape tension slightly and switches itself off automatically if left for longer than 5 minutes in the Recording Standby (Record-Pause) mode.
- For the same reason, the GR-S707E enters the Stop mode if left for longer than 5 minutes in the Still (Play-Pause) mode.

**Battery operation**

STOP → POWER OFF
5 minutes

**Battery/AC operation**

RECORD PAUSE → POWER OFF
5 minutes

PLAY PAUSE (STILL) → STOP
5 minutes

# ASSEMBLE RECORDING TECHNIQUE – 1 (To replace the battery pack during recording)

1. If the battery warning appears in the viewfinder or the Recorder section LCD while recording, stop recording by sliding the POWER switch to OFF. Do not use the STOP button.
2. Replace the battery pack with a charged one.
3. Slide the POWER switch to ON.
   - The unit will be in the Recording Standby mode.
4. Press the recording start/stop button to start recording.

# ASSEMBLE RECORDING TECHNIQUE – 2 (To search for the assemble point with the "Retake" function)

After reviewing a recorded segment, you may decide to re-record it immediately. The Retake function is convenient for this.

1. Make sure the VideoMovie is in the Recording Stand-by mode. (If not, engage the mode.)
2. Press either RETAKE R or F button to reach the point where you wish a new recording to start. When the RETAKE button is released, the VideoMovie will enter the Recording Standby mode again.
3. Press the recording start/stop button to start re-recording.

# ASSEMBLE RECORDING TECHNIQUE – 3 (To record onto a partically recorded tape)

1. Play back the tape to a point where you wish a new recording to start.
   - Use the SHUTTLE SEARCH button for faster location.
2. Press the PAUSE/STILL button at the located point.
   - The unit will enter the Still mode.
3. Press the REC and PAUSE/STILL buttons.
   - The unit will enter the Recording Standby mode.
4. Press the recording start/stop button to start recording.

# ADVANCED VIDEOGRAPHY TECHNIQUES

## WHITE BALANCE ADJUSTMENT

The GR-S707E's Automatic Colour Tracking system senses the colour temperature of the ambient lighting for automatic white balance adjustment.
However, precise colour temperature adjustment is not possible under the following conditions.

- The light falling on the object being shot and the light around the camera are of different colour temperatures.
- Either the object or the camera is in an area covered by a shadow.

In these cases use the GR-S707E's built-in filters for white balance adjustment.

- Press the W. BALANCE button until the required symbol appears on the viewfinder screen.
  ✲ : Under light of halogen or tungsten lamp.
  ▭ : Under light of fluorescent lamp.
  ☼ : Under sunlight (natural light).
- To switch to the automatic adjustment, press the W. BALANCE button until the indication disappears, or press the FULL AUTO button.

### White balance lock

1. Attach the lens cap (white balance cap) to the lens hood. When adjusting indoors, aim the VideoMovie at a light source. When outdoors, aim it at the subject.
2. Press the W.BALANCE LOCK button to lock the current white balance value.
   W.B LOCK appears on the viewfinder screen.
3. To cancel the white balance lock mode, press W.BALANCE LOCK again to release.

**Notes:**

- Even when the W.BALANCE LOCK button is pressed, the "W.B LOCK" indication continues to blink if the lighting condition is beyond the VideoMovie's adjustable colour temperature range. At this time:
  - The white balance is adjusted to the nearest possible colour temperature so that shooting is possible.
  - With a subject under dim lighting, apply more light.
  - For more precise white balance adjustment, use appropriate colour filters.
- Locked white balance adjustment is kept in memory about 30 minutes.
- If you shoot more than 30 minutes after adjusting white balance, or if lighting conditions change, perform white balance adjustment again.

## AGC

The GR-S707E incorporates an AGC (Automatic Gain Control) circuit that electronically activates increased sensitivity in low-light situations.

- The AGC is set to AUTO in the FULL AUTO mode. (No indication on the viewfinder screen.)
- When you do not need the AGC, press the AGC button. The "AGC OFF" will appear on the viewfinder screen.

When you wish to capture the natural change in normal outdoor lighting, switch off the AGC, even when shooting under low illumination, otherwise naturalness will not be maintained.

## IRIS CONTROL

Iris is automatically adjusted in the FULL AUTO mode. However, you can adjust it manually from its current setting.

(1) Press either APERTURE button ("+" or "-") ●.
The iris indication appears on the viewfinder screen and LCD for camera operation.
(2) Select the required iris level.
**APERTURE "+" button:** Each time it is pressed, the aparture opens one step, up to +14 steps.
**APERTURE "-" button:** Each time it is pressed, the aperture closes one step, up to -14 steps.

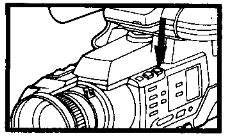
- The viewfinder indication and camera section LCD show the selected setting, indicating only the over- or underexposure status.
- When you simply wish to compensate for strong backlightning, see the "Backlight Compensation" section below.
- To restore the standard "0" iris setting, press the APERTURE "+" and "-" buttons simultaneously.

### Iris Lock

An Iris Lock function has been provided to maintain a constant iris setting for a longer period of time and from location to location.
Press the AUTO/MANUAL button ● while in the Auto Iris mode to retain the current iris setting.

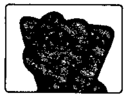
- The current iris setting will appear in the viewfinder and on the camera section LCD from among the following indications – F1.2, F1.4, F2, F2.8, F4, F5.6, F8, F11, and F16.
- While in this mode the Iris can be adjusted manually to any of the above f-stop settings by pressing the MANU IRIS -/+ buttons.
- To cancel the Manual Iris mode, press the AUTO/MANUAL button again.

## BACKLIGHT COMPENSATION

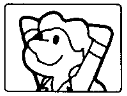


- Press the BLC button. While it is being pressed, the iris is 1 – 2 f-stops wider than that adjusted automatically.

When excessive lighting is located in back of the subject, correct exposure may not be obtainable. To compensate for this, simply press BLC.



Without BLC

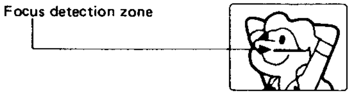


With BLC

## FOCUSING

**Auto focusing**

The GR-S707E incorporates an auto-focus mechanism which enables automatic focusing onto most subjects.



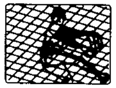
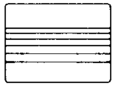
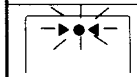
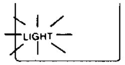
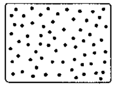
- A narrow area in the center and extending horizontally for about 1/2 the width of the screen is used to detect focus. (No actual indication provided on the screen.)

**Simply press the FULL AUTO button. ㊿**

### CAUTION

- Do not touch the focus ring while the autofocus mechanism is in operation.
- Except while actually shooting, keep the lens capped. Whenever light enters the lens, the auto-focus mechanism functions and consumes power.
- Do not attempt to use auto-focus when a teleconversion or wide-angle conversion lens is attached. This could lead to damaging the auto-focus mechanism. Engage the manual focus mode with add-on lenses.

Correct focus may not be obtained in the following situations. In such cases manual focusing should be performed to obtain proper focus.

| | |
|---|---|
|  | Two subjects at different distances overlap in the same scene. |
|  | Horizontal lines only. |
|  | If focus-aid indication is difficult because of low contrast, these focus-aid indicators appear simultaneously and blink. |
|  | Low illumination where the under-exposure indicator appears on the Viewfinder screen. |
|  | Minute patterns or identical patterns that are regularly repeated. |

**Manual focusing**

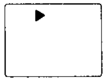
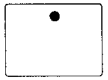
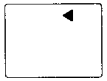
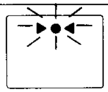
When you select the Manual Focus mode, proceed as follows.

1. Press the FOCUS button ㉟ to release the Auto Focus mode.
   The focus aid indication(s) appears on the viewfinder screen.
2. Zoom in on a subject by pressing the "T" button (64) of the power zoom buttons.
3. Turn the focus ring (67) to focus onto the subject. Refer to the focus aid indication chart on the right.
4. Determine the composition by pressing the "W" button (64).

- To release the Manual Focus mode (to engage the Auto Focus mode), press the FOCUS button or FULL AUTO button.
- When you use the Manual Focus mode, be sure to focus the lens in the maximum telephoto position. If you focus in on a certain subject in the wide-angle position, sharply-focused images cannot be obtained when zoomed up because the depth of field is reduced at longer focal lengths.

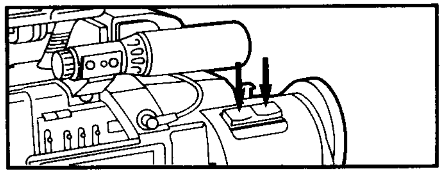
### FOCUS INDICATORS

The focus indicators on the viewfinder screen function in the Manual Focus mode.

| Condition | Indication | Corrective operation |
|---|---|---|
| Focus point behind the subject |  | Turn the focus ring clockwise until the center square lights. |
| Correct focus |  | Keep the focus ring in the same position. |
| Focus point in front of the subject |  | Turn the focus ring counterclockwise until the center square lights. |
| Indication not possible because of low contrast |  | Estimate the subject distance and set the focus ring referring to the distance scale on it. |

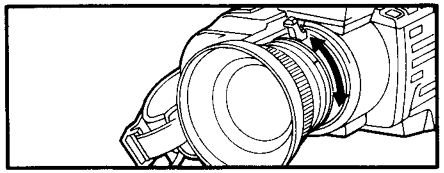
## ZOOMING

When the focal length of the lens is varied by turning the zoom ring, the image appears to come nearer to or retreat from the viewer.



**Power zooming**

Press "T" for zooming in and "W" for zooming out. Two zooming speeds are available. For slow-speed zooming, press lightly. For regular-speed zooming, press firmly.

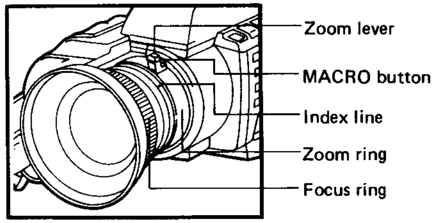


**Manual zooming**

Rotate the zoom lever downwards for zooming in and upwards for zooming out.

## MACRO SHOTS

Normally, focusing is possible only for subjects that are more than 1.2 m away from the camera. By setting the lens to the Macro mode, it is possible to manually focus in on any subject located inside that limit, right up to the front of the lens. The MACRO and Zoom ranges combined give continuous shooting ability from close-up to infinity.



- **First engage the manual focus mode.**

**Engage MACRO**

1. While pressing in the macro button, turn the zoom ring in the direction of the arrow until the number "9" on the zoom ring passes the index line.

**Focus**

2. Focus by turning the zoom ring slowly.

- Use the zoom ring to focus in the MACRO range.
- Turning the zoom ring will slightly alter the angle of view of the lens.
- The zoom and auto-focus machanisms do not function during macro shooting.

**Release MACRO**

3. To release the Macro mode, turn the zoom ring in the direction of the arrow until the number "9" passes the index line.

**Note:**
It is advisable to increase illumination when shooting in macro for best results.

## FADE-IN/FADE-OUT

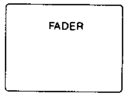
The GR-S707E is equipped with an automatic fade mechanism for allowing smooth fade-in and fade-out with a black-coloured blank screen. Audio also fades in sync with video. (The audio source connected to the AUDIO IN terminal cannot be faded in or out.)

### Automatic fade-in

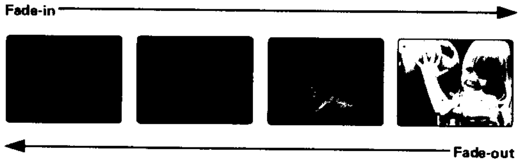
1. Determine the composition in the Record Standby mode and press the FADER button to reserve the Fade-in mode.
2. Press the recording start/stop button. The screen will quickly become black and recording begins. When the recording start/stop button is released, fade-in will start. It will be completed in about 5 seconds. If the recording start/stop button is not released when pressed, the black picture will remain on the screen and be recorded.

### Automatic fade-out

1. Start shooting as usual.
2. Press the FADER button to reserve the fade-out mode.
3. Press the recording start/stop button. Fade-out will start and be completed in about 5 seconds. When completed, Record Standby mode is entered. If the recording start/stop button is not released when pressed, the final black picture remains on the screen and continues to be recorded, until the button is released.



FADER is display in the viewfinder when fading is reserved, and continues to be displayed until fading in or out is completed.



## INDEX CODE MARKING

The VHS Index Search System (VISS) gives you automatic access to any point you select on a recording. Only the marking aspect of the Index Search System is included in this unit. It allows index codes to be placed on recorded tape for convenient dubbing or editing on VCRs with an Index Search function.

- Press the VISS button once to put an index code onto the tape. The INDEX mode indication blinks in the viewfinder during the marking process.

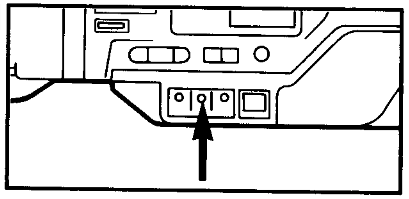
**Notes:**

- When the "INDEX" indication appears in the viewfinder, no VideoMovie functions can be executed.
- If the VISS button has been pressed in the Record Pause mode, an index code is put at the point where the recording start/stop button is pressed.

## MULTIPLE-SPEED ELECTRONIC SHUTTER

The GR-S707E is equipped with a selectable high-speed shutter that allows better recording of quick movements for sharp, clear stills or slow-motion playback. Select it when taping fast-action shots that you will want to play back later in still or slow-motion mode.

1.



Press the SHUTTER button to switch to the desired electronic shutter speed. This can be done while recording or in any other mode. It continues at the selected speed until switched to another speed.

2. Select the shutter speed among 1/1000, 1/500, 1/250 and Standard (1/50) second by pressing the SHUTTER button. Each time it is pressed, the shutter speed changes in the following order:

   1/1000 → 1/500 → 1/250 → (Standard)

3. When finished recording the fast-action scene, switch back to the standard shutter speed by pressing the SHUTTER button until STD appears on the LCD.

- When selected, the High-Speed Shutter mode is indicated on the viewfinder screen and LCD.
- The Standard Shutter mode is indicated by "STD" on the LCD.

**Notes:**

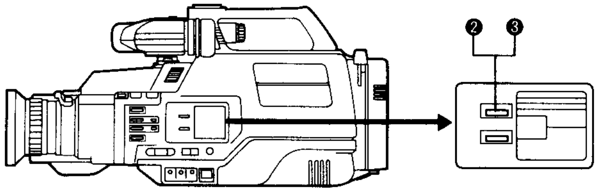
- The High-Speed Shutter mode requires slightly more subject *illumination than the Standard Shutter* mode. Therefore, the low-light warning may blink in the viewfinder. If so, switch to the Standard Shutter mode.
- Picture colour may be adversely affected in the high speed shutter mode when the subject is lit by alternating discharge-type light sources such as fluorescent or mercury-vapor lights.
- When playing back a section recorded in the High-speed Shutter mode, movement of subjects in the picture may not be smooth. This is not due to any defect of the unit.
- Pressing the FULL AUTO button also restores the shutter speed to the standard level.

# SPECIAL RECORDING FUNCTIONS

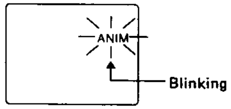
**Note:**
When performing animation or time-lapse shooting, set the recording mode switch to "SP". Recordings mode in the LP mode can result in noisy pictures.

### Animation Shooting

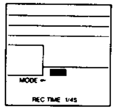
Animation produces the illusion of movement in otherwise stationary scenes or objects. This technique is accomplished by shooting a series of slightly different pictures of the same scene or slightly different poses of the same object for a brief period of time.



❶ Put the VideoMovie in the Record-Pause mode.
❷ Press the REC TIME button.
- The following information will appear in the camera section LCD with an initial setting for 1/4S to show the camera is set to record for about 1/4 second.



Viewfinder



Camera section LCD

❸ Press the REC TIME button again to select the desired recording time. The following sequence of time settings is displayed with each press of the button: 1/4S, 1/2S, 1S and continuous mode.
❹ Press the Recording Start/stop button after focusing the camera on the subject.
- Recording stops automatically in the Record-Pause mode after the selected period of time.

❺ Repeat Step 4 for the required number of pictures.
❻ Play back the recorded series to check if results were satisfactory.

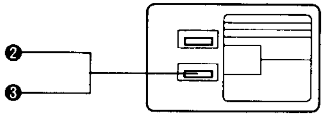
**Notes:**
- ●Keep the camera steady in one position when filming the series of shots for best results. Mounting the camera on a tripod is recommended.
- ●Release the Animation mode by pressing the REC TIME button till the "ANIM" indicator in the LCD and viewfinder disappears, or press the STOP button.
- ●Set the ALC switch to OFF, then adjust the Hi-Fi REC LEVEL control knob to "0". Add sound later by using the Audio Dubbing function.
- ●The Animation mode can only be engaged from the Record-Pause mode.
- ●Before recording in the Animation mode at the very beginning of a tape, set the VideoMovie to the Record mode for about 5 seconds, so that the tape runs smoothly. Using the Fade-in function at this point is a good way to begin an animated program.

## Self-Timer Shooting

The Self-Timer function allows you to set the amount of time delay before recording starts after the Recording Start/Stop button has been pressed. If the VideoMovie has been secured, the operator can enter the picture before actual recording begins.

❶ Set the VideoMovie to the Record-Pause mode.

❷ Press the INTERVAL button ⓭ .
- ●The following information will appear in the camera section LCD with an initial setting for 15S to show the camera is set for a 15-second delay before recording begins.

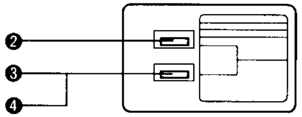


❸ Select the desired interval time by pressing INTERVAL repeatedly. The following sequence of time settings is displayed with each press of the button: 15S, 30S, 1M, 3M and normal mode.

❹ Press the Recording Start/stop button. When the selected time has elapsed, recording begins automatically.
- ●When performing Self-Timer shooting, if the TALLY switch is set to ON, the tally lamp will start blinking approximately 10 seconds before the actual recording begins. Then when recording starts, the lamp lights normally to indicate recording is in progress.

## Time-Lapse Shooting

The Time-Lapse function allows automatic sequential on/off recording at preset time spans. With the camera continuously focused on a specific scene or object, the resulting recording will show subtle changes (such as shifts in cloud formations, plant growth etc.) over an extended period of time.



❶ Set the VideoMovie to the Record-Pause mode.

❷ Press the REC TIME button.
- ●The following information will appear in the camera section LCD with an initial setting for 1/4S to show the camera is set to record for 1/4 second.
- ●Select the desired recording time by pressing REC TIME repeatedly. The following sequence of time settings is displayed with each press of the button: 1/4S, 1/2S, 1S and continuous mode.

❸ Press the INTERVAL button.
- ●The following information will appear in the camera section LCD with an initial setting for 15 seconds.

❹ Select the desired interval time by pressing INTERVAL repeatedly. The following sequence of time settings is displayed with each press of the button: 15S, 30S, 1M, 3M and Animation mode.

❺ Press the Recording Start/Stop button to start the Time-Lapse Recording. The selected recording time and interval time will alternate automatically.
- ●To release the Time-Lapse mode, press either the STOP button, or the REC TIME and INTERVAL buttons the number of times necessary to release their respective mode, or press the Recording Start/Stop button during the Interval Time.

**Notes:**
- ●The Time-Lapse mode will enter the STOP mode automatically after the recording sequence is performed about 500 times.
- ●Set the ONE-SHOT TIME COUNTER switch to OFF when using special recording functions.
- ●The tally lamp functions in the same way as in Self-Timer shooting.

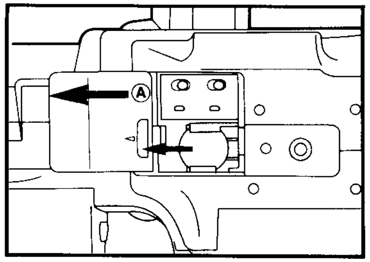
# RECORDING THE DATE/TIME

**Warning on lithium battery.**
- **● Dispose of used battery promptly.**
- **● Keep away from children.**
- **● Do not disassemble and do not dispose of in fire.**

### Battery insertion

This battery powers the date/time function.
1. Slide the cover off the clock battery compartment on the bottom of the VideoMovie by lightly pushing forward on the section labelled Ⓐ in the diagram.
2. Insert the provided lithium battery **with the plus (+) side up.**
3. Slide the cover back onto the unit until it clicks in place.

**Note:**
- ●Switch off the unit's power before inserting the battery.



**Note:**
Switch off the unit's power before removing old battery.
Replace battery with Panasonic (Matsushita type) CR 2025 only. Use of another battery may present risk of fire and explosion.

### Battery replacement

The battery lasts for about one year. When the lithium battery warning (CLOCK) appears in the viewfinder, this battery needs to be replaced. Obtain a new CR 2025 lithium battery and follow the following procedure.
1. Remove the battery by pushing it in the direction of the arrow.
2. Insert the new CR 2025 **with the plus (+) side up.**
3. Slide the cover back until it clicks.

### Date/time setting

Before adjusting the date and time for the first time or after replacing the battery, 1.1.89 appears in the viewfinder, indicating the clock needs to be set.

① Switch the unit's power on, 1.1.89 0:00 will appear in the viewfinder. Press MONITOR button to enter rehearsal mode.

② Press the DATE/TIME SELECT button – the day blinks.

③ Press the DATE/TIME SET button to choose the correct day.

④ Press the DATE/TIME SELECT button to select the next item to change, with the item selected changing in the following sequence:

→ Day → Month → Year → Hour → Minute → Finish Adjustment ←

⑤ Repeat steps ② and ③ to set all items. After the minute setting has been performed, press the DATE/TIME SELECT button, and items will cease blinking, and the clock will resume normal function.

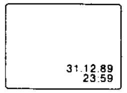
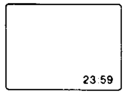
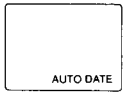
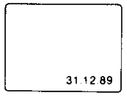
### Date/time recording

The date, time, or date and time can be displayed and recorded according to the selected mode. Press the DISPLAY SELECT button to cycle through the modes in the following order:

→ Date/Time display → Date display → Time display → AUTO DATE record reserve → On-screen display →

- ●When the auto-date-record function is selected, "AUTO DATE" appears in the viewfinder, until recording begins. As long as this function is chosen, the date and/or time will be automatically displayed and recorded for 5 seconds following the first pressing of the recording start/stop button after the power is turned on.
- ●AUTO DATE record reserve indication will cease to be displayed, if the DISPLAY ON/OFF button is set to OFF.

### Date/time recording indications

| Date/time display | Date display | Time display | AUTO DATE record reserve | |
|---|---|---|---|---|
| <br>31.12.89<br>23:59 | <br>31.12.89 | <br>23:59 | <br>AUTO DATE<br>Auto date record reserved | <br>31.12.89<br>Auto date record executed |

# PLAYBACK

The GR-S707E permits playback of recorded S-VHS-C and VHS-C video cassettes.
For connections refer to pages 34 and 35.

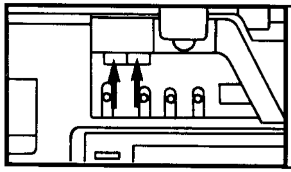
**Preparations**
- With a television equipped with audio/video (or S-VIDEO) input connectors, set the television's TV/VIDEO switch to VIDEO.
- With a regular television receiver, set the aerial select switch of the RF-V3E RF unit to VIDEO and TV receiver's channel selector to your video channel specified AV channel.

**1** Connect a power supply unit.
(Battery or AC operation: see page 19.)

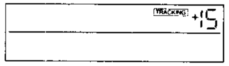
**2** Slide the POWER switch to ON.

**3** Insert a pre-recorded S-VHS or VHS cassette.

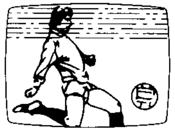
**4** Press the PLAY button. Playback will start.



**Tracking adjustment**
If noise bars appear on the screen, press either TRACKING control button to minimize noise.



Refer to the LCD indicator



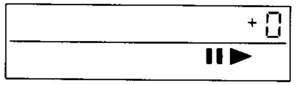
## STILL PLAYBACK

Press the PAUSE/STILL button ㉑ during playback. The picture will stop on the screen.
- After about 5 minutes of still playback, the unit enters the Stop mode automatically for tape protection and switches itself off.
- To release the Pause/Still mode, press the PLAY button.
- In the Pause/Still mode, each time the PAUSE/STILL button is pressed, the frame will advance.

**Notes:**
- Noise may appear on the screen during Shuttle Search, still and slow-motion playback. This is not due to any defect of the unit.
- Pictures may become monochrome during Shuttle Search in the LP mode. This is not due to any defect of the unit.
- Audio will be muted during Shuttle Search, Still and Slow-motion play back.

## SLOW-MOTION PLAYBACK

While in the Play of Fast-Speed Search mode, the SLOW button can be pressed anytime to obtain slow-motion playback.
- If noise bars appear on the screen, press either TRACKING control button to minimize noise.



Recorder section LCD

## SHUTTLE SEARCH

① **Fast-speed search in the forward direction**
Press and quickly release the FF button ⓲ in the Play mode. Playback will be speeded up to 7 times normal speed.

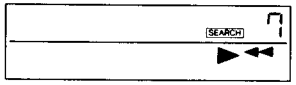
② **Fast-speed reverse search**
Press and quickly release the REW button in the Play mode. The tape will be played back in the reverse direction at 7 times normal speed.

**Note:**
- For briefer fast-speed searching, keep the Shuttle Search button pressed for more than 2 seconds; when you release the button, normal playback resumes.

## VARIABLE-SPEED SEARCH FUNCTION

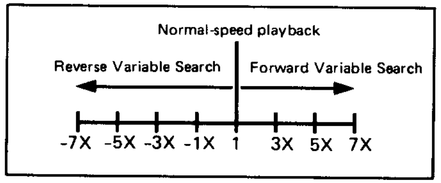
Variable-Speed Search is possible in either forward or reverse direction from the Play mode.

**To search in the reverse direction:**
- First press the REW button while in the Play mode to start fast-speed searching at 7 times normal speed in the reverse direction (7X).

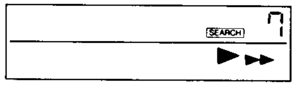


Recorder section LCD

- Press the TRACKING "-" button to reduce searching speed –from 7X to 5X, from 5X to 3X, etc. While searching at a slower speed, press the TRACKING "+" button to increase searching speed to 7 times normal in the reverse direction.



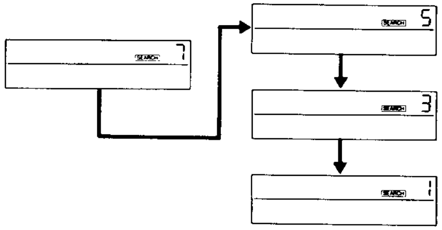
**To search in the forward direction:**
- First press the FF button while in the Play mode to start fast-speed searching at 7 times normal speed (7X).



Recorder section LCD

- Press the TRACKING "-" button to reduce searching speed – from 7X to 5X, from 5X to 3X, etc. While searching at a slower speed, press the TRACKING "+" button to increase searching speed to 7 times normal in the forward direction.

The following indications appear in the recorder section LCD in both forward and reverse Search modes.

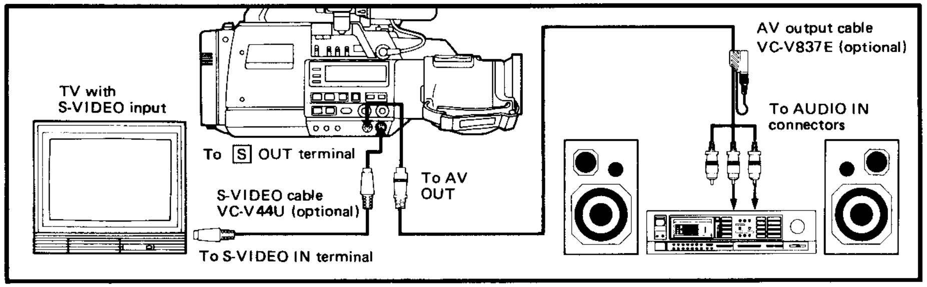


# CONNECTIONS FOR PLAYBACK

## ① Connection to a television equipped with S-VIDEO input connector

For this situation, use the S-VIDEO cable and the AV output cable.

**To a stereo system**
- With this set-up, monitoring while camera shooting is also possible.



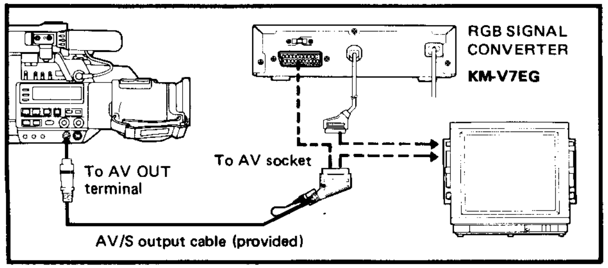
**Procedure**
- Connect the Ⓢ OUT terminal of the GR-S707E to the S-VIDEO IN terminal of the S-VIDEO-equipped TV receiver.
- Connect the AV OUT of the GR-S707E either to the TV receiver's AUDIO IN connectors or to the AUX IN or TAPE MONITOR terminals of an amplifier.
- Connect the AV OUT of the GR-S707E to the A/V socket of the S-VIDEO equipped TV receiver.
- Set the VIDEO OUT select switch to "Y/C".

**Application**
- With this setup, you can enjoy prerecorded S-VHS Hi-Fi tapes in stereo while viewing them on an S-VIDEO-equipped TV receiver.
- If the TV receiver is not equipped with a 4-pin S-VIDEO connector, this stereo-system connection is not possible.

**CAUTION:**
- The GR-S707E has a dynamic range of more than 80 dB in the hi-fi audio mode. It is recommended that you check the maximum level if you are going to listen to the hi-fi audio signals through a stereo amplifier. A sudden surge in speaker input may cause speaker damage.
- Some speakers and televisions are specially shielded to prevent television interference. If neither are shielded, do not place the speakers adjacent to the TV set, otherwise the video playback picture will have interference.

## ② Connection to a television equipped with audio/video input connectors

- Simply connect the AV OUT terminal of the GR-S707E either directly to the VIDEO and AUDIO IN connectors of the television using the provided AV/S output cable, or to a KM-V7EG RGB signal converter (optional) and the RGB signal converter to the RGB-compatible AV IN connector of the television.
- Set the VIDEO OUT select switch as required: either to "CVBS" (with the direct TV connection) or to "Y/C" (with the RGB converter connection).

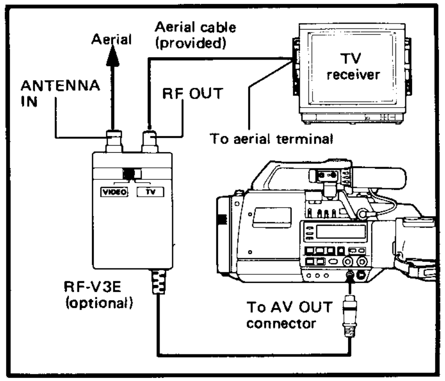


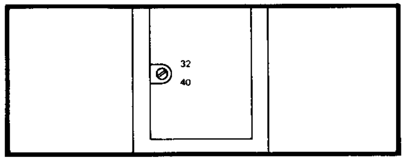
**Note:**
The KM-V7EG (optional) enables the separated Y/C signal to be converted into an RGB signal so the superb quality of Super VHS pictures is available.

## ③ Connection to a television not equipped with audio/video input connectors

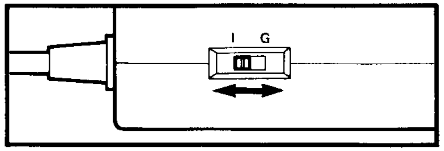
For this situation, use the RF-V3E RF unit.

1. Remove the aerial cable from the TV receiver.
2. Connect the aerial cable to the ANTENNA IN terminal of the RF unit.
3. Connect the RF OUT terminal of the RF unit to the aerial terminal of the TV receiver using the provided aerial cable.
4. Connect the VIDEO/AUDIO INPUT cable of the RF unit to the AV OUT connector of the GR-S707E.
5. Adjust the RF converter output channel according to your VIDEO CHANNEL.





- **RF converter channel adjustment screw**
  The RF unit permits playback of video and audio recordings through a TV receiver. The signals from the RF unit are viewed through a vacant channel not used for broadcasting in your area. The output frequency of the RF converter has been set to correspond to a broadcast on UHF channel 36. To view playback pictures from the GR-S707E with your TV receiver, tune its specified AV channel to UHF channel 36. If channel 36 is employed for broadcasting in your area, readjust the RF converter output channel to one of the vacant channels between 32 and 40. To make this adjustment, remove the small cap on the back of the RF unit and turn the adjustment screw with a screwdriver to tune in a vacant channel.
- **TV system select switch (I/G)**
  When you use a TV receiver built to the British PAL standard, shift the system select switch to "I".



**PRECAUTIONS FOR RF-V3E (optional)**
- For exclusive use with the VideoMovie.
- Do not disassemble or remodel the RF-V3E.
- Do not expose it to strong shocks.
- Unplug the connected equipment during lightning storms. (Never touch the aerial cable.)

- **RF converter channel adjusting procedure**

1. Set the AV channel of the TV receiver to one of the vacant channels.
2. Set the VIDEO OUT select switch to "CVBS".
3. Power the GR-S707E.
4. Put the GR-S707E in the Rehearsal mode (see page 23).
5. Set the VIDEO/TV switch of the RF unit to VIDEO.
6. While monitoring the output signal on the TV screen, turn the RF converter channel adjustment screw so that the monitored picture comes in most clearly.

**CAUTION:**
To view the GR-S707E recordings with a TV receiver, use a TV receiver having a specified AV channel and employ this AV channel as your VIDEO CHANNEL, otherwise playback may be disturbed with vibrating or bending pictures. AV channels refer to channels exclusively for video playback; because AFC circuits are applied to these channels, the playback pictures can be stabilised. Recent TV receivers have one or more AV channels.

### OPERATION

**Viewing video cassettes being played back with the GR-S707E**
To view video cassettes or to monitor the recording, set the VIDEO/TV switch of the RF unit to VIDEO and the TV channel selector to the channel corresponding to the RF output channel.

**Viewing television programmes**
Set the VIDEO/TV switch to TV, and the TV receiver will function as usual.

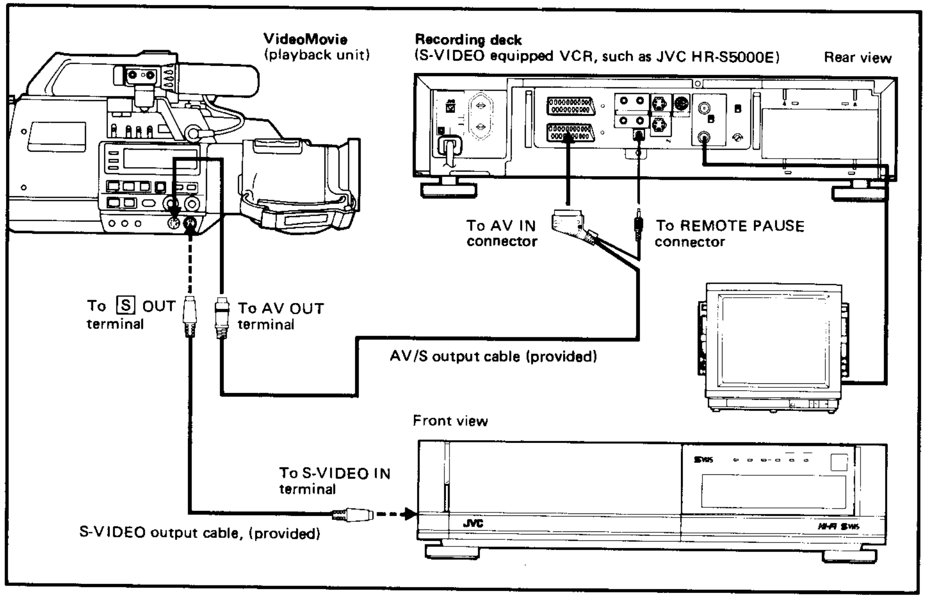
# EDITING TECHNIQUES

## ① Master Edit Control system (Assemble editing) (When using a JVC VCR equipped with a Remote Pause terminal)

This feature functions only when using a designated JVC VCR equipped with a Remote Pause terminal. The Master Edit Control system enables control of the VCR using the GR-S707E's controls, for quality assemble editing without transit-point lags or distortion.

**Preparation**

- Connect the GR-S707E and the recording deck as in the diagram below.
- Set the VIDEO OUT switch to Y/C or CVBS.
- Turn on both the GR-S707E and the recording deck.
- Correctly insert the appropriate cassettes into the GR-S707E and the recording deck.

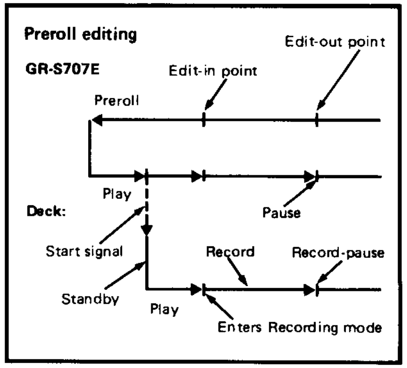

VideoMovie
(playback unit)
Recording deck
(S-VIDEO equipped VCR, such as JVC HR-S5000E)
Rear view
To AV IN
connector
To REMOTE PAUSE
connector
To [S] OUT
terminal
To AV OUT
terminal
AV/S output cable (provided)
Front view
To S-VIDEO IN
terminal
S-VIDEO output cable, (provided)

1. Engage the recording deck's Record-Pause mode. (At this time, the tape in the deck winds backward 1.3 seconds.)
2. Set the DUBBING MODE switch ❷ of the GR-S707E to ON.
3. Engage the GR-S707E's Play mode ⓴ to locate the edit-out point on the tape. When this point is reached, press PAUSE/STILL (21) .
4. Press RESET ⓲ on the GR-S707E then press MEMORY ⓱ . "MEMORY" and "+00M 00S" will appear on the LCD panel.
5. Press REW/SHUTTLE SEARCH to locate the edit-in point. When it is reached, engage the Still mode.

**Note:**
There are some VCRs which are not compatible with Master Edit Control. For these units use the VCR's pause control to perform edit-in or edit-out functions.

6. Press EDIT on the GR-S707E to start editing.
   - At this time, the GR-S707E and the recording deck carry out the following procedure automatically:
     1) The GR-S707E prerolls the tape for 5 seconds then starts playback to stabilize the tape run.
     2) After the GR-S707E has played back for 3.7 seconds, it sends a command signal to the recording deck. The deck then starts playback together with the GR-S707E for 1.3 seconds.
     3) When the GR-S707E's tape reaches the edit-in point, the deck starts recording in synchronization with it.
7. When the GR-S707E's tape reaches the edit-out point (counter reading of "+00M 00S"), the VideoMovie enters the Still mode and the recording deck enters in the Record-Pause mode automatically.

- Repeat above steps as required.
- When the tape reaches the preset edit-out point during the dubbing operation, it may stop slightly before or after the designated point on the tape.


Preroll editing
GR-S707E
Edit-out point
Edit-in point
Preroll
Deck:
Play
Pause
Start signal
Record
Record-pause
Standby
Play
Enters Recording mode

## ② Insert Editing

Insert editing means recording a new scene into a section of prerecorded tape so that a part of the original recording can be replaced with a new sequence without excessive picture distortion at the edit-in and edit-out points. In the Insert Edit mode, the original audio on the normal audio track remains unchanged.

1. Locate the desired edit-out point on the VideoMovie's tape and press PAUSE/STILL.
2. Press RESET to obtain a "+00M 00S" reading, then press MEMORY to obtain an "MEMORY" indication on the LCD.
3. Press REW/SHUTTLE SEARCH to rewind the tape a little beyond the beginning of the scene your wish to insert.
4. Press PAUSE/STILL exactly at the beginning of the scene you wish to insert.
5. While holding INSERT pressed, press PAUSE/STILL. The INSERT indicator appears and the VideoMovie enters the Insert Edit mode with the scene at which the VideoMovie is aimed appearing on the screen for monitoring.
6. Press Recording start/stop to insert the new sequence.
7. When the counter reading of "+00M 00S" is reached, insert editing stops automatically and the VideoMovie enters the Playback mode.

**Notes:**

- When the tape reaches the preset edit-out point during the editing operation, it may stop slightly before or after the designated point on the tape.
- For inserting (replacing) the normal sound only, see " ④Audio Dubbing" on page 38.

### ③ Tape Dubbing

In order to perform simple dubbing of an entire tape, proceed as follows.

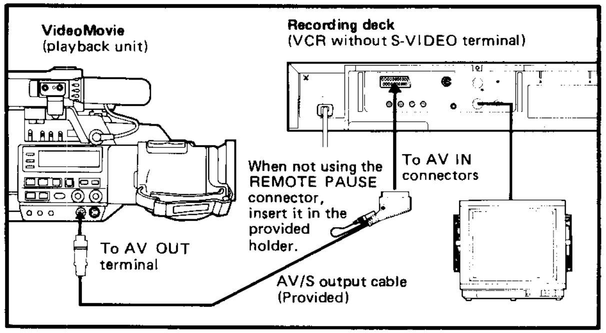
**Dubbing to a second recorder**

**Preparation**

- Make connections according to the diagram below.
- Turn on all components' power.
- Correctly insert the appropriate cassettes.
- Set the DUBBING MODE switch to ON.

**1** Engage the connected recorder's Record-Pause mode, and press the GR-S707E's PLAY and PAUSE/STILL buttons together to engage its Pause mode.

**2** Press the GR-S707E's PLAY button and engage the connected recorder's Record mode to start dubbing. (The GR-S707E starts playback; the recorder starts recording.)


**VideoMovie**
(playback unit)
**Recording deck**
(VCR without S-VIDEO terminal)
When not using the REMOTE PAUSE connector, insert it in the provided holder.
To AV IN connectors
To AV OUT terminal
AV/S output cable (Provided)

**3** To edit out unwanted material, engage the recorder's Record-Pause mode.
- If using with a JVC VCR equipped with a remote pause terminal, perform as follows;

1) Make connections the diagram on page 36.
2) Engage the connected recorder's Record-Pause mode.
3) Press the EDIT button of the VideoMovie. The deck's recording begins in synchronization with the GR-S707E's playback start.

### ④ Audio Dubbing

Audio dubbing means recording a new soundtrack on a pre-recorded tape, i.e., replacing the original sound with new audio material.

**Precautions**

- Tapes with their safety tabs removed cannot be audio dubbed. Reseal the safety tab slot to perform the dubbing.
- If whistling or howling is heard during audio dubbing, reduce the TV volume or move the mike farther away from the TV.
- When dubbing from a microphone, connect the microphone to the VideoMovie.

**1** Press PLAY to start playback of the tape.

**2** Press REW/SHUTTLE SEARCH and FF/SHUTTLE SEARCH to locate more quickly the place on the tape you want audio dubbing to begin.

**3** Press PAUSE/STILL at the exact beginning point for aduio dubbing.

**4** While pressing AUDIO DUB, press PAUSE/STILL to enter the Audio Dub Standby mode.

**5** When you are ready with the new audio material, press PLAY to begin audio dubbing.

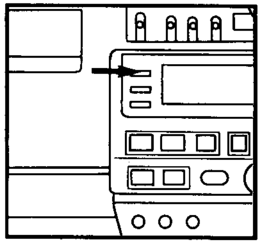
**6** To stop audio dubbing, press PAUSE/STILL to engage the Audio Dub Pause mode, or press STOP.

# TIME COUNTER FUNCTIONS

## Remaining Tape Time Indicator

The tape counter is switchable to the remaining tape time indicator.

**1**



Press the COUNTER/REMAIN button to obtain the Remaining Tape Time mode.

**2** The remaining tape time is displayed on the LCD as shown.

**With an SE-C30 tape in the LP mode:**

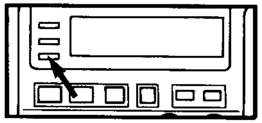
60 MIN → 50 MIN → 40 MIN → 30 MIN → 20 MIN → 15 MIN
0 MIN ← 1 MIN ← 2 MIN ← 3 MIN ← 4 MIN ← 5 MIN ← 10 MIN ←

**Notes:**
- Remaining tape time is calculated when "–MIN" indication appears on the LCD.
- During recording, the remaining tape length is calculated in reference to the recording mode selected with the REC MODE select switch.
- The indicated remaining time is approximate. The time required to calculate the remaining tape length and the accuracy of that calculation may vary according to the type of cassette tape.

## Time Counter Memory Function

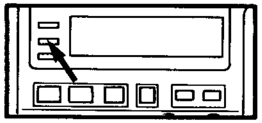
The GR-S707E incorporates a counter memory mechanism which facilitates locating specific tape segments.

**1**



Press the RESET button to reset the counter to "+00M 00S".

**2**



Press the MEMORY button. The "MEMORY" mark will appear.

**3** After recording or playback, press the STOP button, then the REW button. The tape will automatically stop at a counter reading of around "+00M 00S".

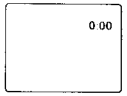
**4** Press the PLAY button to start playback.

**Notes:**
- The counter memory function is effective in the Fast Forward mode as well.
- To cancel the memory function, press the MEMORY button. "MEMORY" will disappear.
- When the power supply unit is disconnected, all indications on the display disappear and the counter memory function is cancelled.

## One-Shot Time Counter Function

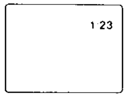
This feature provides a recording time viewfinder indication in minutes and seconds for each scene as it is being shot.

**1** Set the ONE-SHOT TIME COUNTER switch to ON. The One-Shot Time Counter indication appears in the viewfinder.



**2** When the recording start/stop trigger switch is pressed, recording starts and the counter starts advancing in one-second intervals.

**3** When the recording start/stop switch is pressed again to enter the Recording Standby mode, the counter stops and displays the duration of the just-recorded segment.



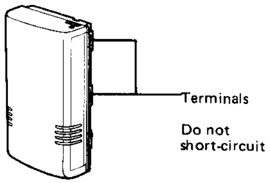
- If recording is resumed, the counter is automatically reset to 0:00 and counting continues for the duration of the next shot.
- To remove the One-Shot Time Counter indication from the viewfinder screen, set the ONE-SHOT TIME COUNTER switch to OFF.

# CHARGING THE BATTERY PACK

To charge the battery pack, use the exclusive AC power adapter/battery charger AA-V6EG (provided/optional) or car battery charger BH-V5E (optional).

## A WORD ON THE EXCLUSIVE BN-V66RU/V77RU BATTERY PACKS

The BN-V66RU/V77RU are nickel-cadmium batteries. Give attention to the following to make the most of their characteristics.



**Temperature ranges:**
The recharging time is based on a room temperature of 20°C.
The lower the temperature, the longer the recharging time.
For charging: 10°C to 35°C
For operating: 0°C to 40°C
For storing: -10°C to 30°C

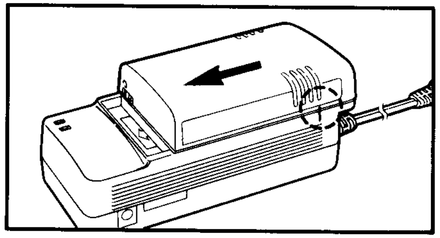
The battery pack has been kept in the uncharged state for shipment. Therefore, before use, charge it.
BE SURE TO CAREFULLY READ THE CAUTION ATTACHED TO THE BATTERY PACK.

### Charging procedure

**Charging time**

| | |
|---|---|
| BN-V66RU 70 min. | BN-V77RU 80 min. |

- The charging time differs depending on the ambient temperature and the condition of the battery pack.



1. Connect the AC power cord to a wall outlet. (The POWER indicator will light.)
2. Align the marks on the battery pack and adapter.
3. Slide the battery pack in the direction of the arrow until it locks in place.
4. When charging is completed, the CHARGE indicator that is red turns to green.

**PRECAUTIONS**

- If used near a radio, the provided AA-V6EG AC power adapter/battery charger may interfere with reception.
- Prevent inflammables, water and metallic objects from entering the unit.
- Do not disassemble or modify the unit.
- Do not apply shocks to the unit.
- Do not subject the unit to direct sunlight.
- Avoid using the unit in extremely hot or humid places.
- Avoid using the unit in places subject to vibrations.

**Note:**
The optional BH-V5E Car Battery Charger can charge a battery pack from a car battery. For details refer to the instructions of the BH-V5E.

**Recording time for the GR-S707E**

| | |
|---|---|
| BN-V66RU: 40 min. | BN-V77RU: 60 min. |

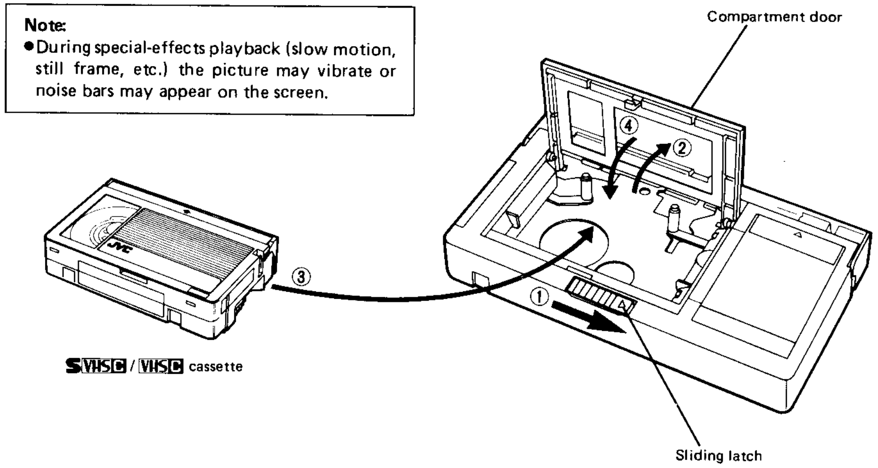
- The recording time per charge is influenced by the duration of recording standby, frequency of zooming, etc. It is safer to have spare battery packs.

# USING THE CASSETTE ADAPTER (provided)

By using the provided Cassette Adapter, an S-VHS or a VHS compact video cassette recorded with this Video-Movie can be played back with any deck-type S-VHS video recorder (deck-type VHS video recorders can play back only cassettes recorded in VHS). Also, either an S-VHS or a VHS compact video cassette installed in the cassette adapter is fully compatible for both recording and playback on any deck-type S-VHS or VHS video recorder.
**Note:** Only compact video cassette tapes maked S-VHS-C or VHS-C can be used with the Cassette Adapter.

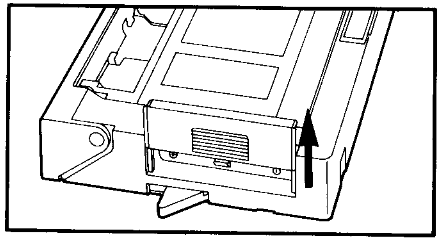
**●C-P5U Cassette Adapter**
The battery-operated C-P5U performs tape loading and unloading automatically.

**Note:**
- During special-effects playback (slow motion, still frame, etc.) the picture may vibrate or noise bars may appear on the screen.



### Inserting the battery into the cassette adapter

Remove the battery cover by sliding it up.
Install one "R6" battery and reattach the cover.



**General Battery Precautions**

- When the unit is not functioning even when correctly operated, the battery is exhausted. Replace it with a fresh R6 battery.
- Use only R6-size batteries in the unit. Please make note of the following rules for battery use. When misused, batteries can leak or explode.

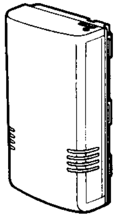
1. Insert the batteries correctly according to the diagram inside the battery section.
2. Do not use old and new batteries together.
3. Do not use two different kinds of batteries. Although sizes may be the same, voltages may differ.
4. Do not expose batteries to excessive heat as they can leak, or explode. Do not dispose of batteries in a fire.
5. Remove batteries from the unit if it is to be stored for an extended period to avoid battery leakage which can cause malfunctions.

# SYSTEM FLEXIBILITY

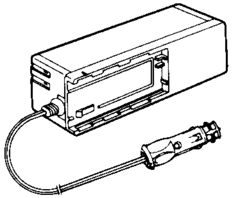
For maximum enjoyment, make the most of the provided or optional accessories depending on the situation.

- **High-capacity battery pack BN-V66RU**
  **Page 19**

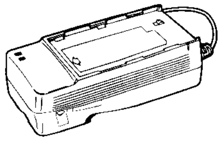
- **Super-high-capacity battery pack BN-V77RU**
  **Page 19**



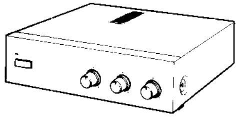
- **Car battery charger BH-V5E**
  **Pages 19 and 40**
  Use to charge the battery pack, or power the GR-S707E using a car battery.



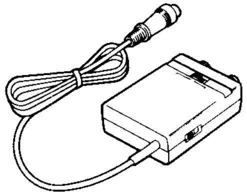
- **AC power adapter/battery charger AA-V6EG**
  **Pages 19 and 40**
  Use to power the GR-S707E with household AC current or charge the battery pack.



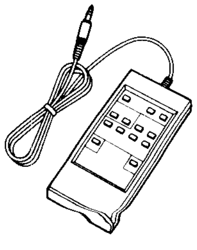
- **RGB signal converter KM-V7EG**
  **Page 34**



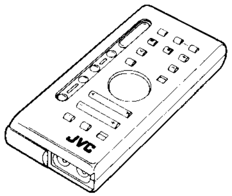
- **RF unit RF-V3E**
  **Page 35**
  Use to connect the GR-S707E to a regular TV receiver (with provided antenna cable) for playback.



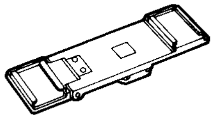
- **Remote control unit RM-V15U**
  **Page 45**
  Controls VideoMovie's VCR functions from a distance.



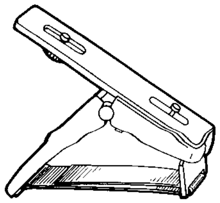
- **Character generator CG-P50E**
  **Page 44**
  Allows superimposition of titles, dates and lap time during recording.



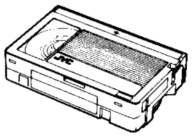
- **Shoe adapter CU-V410U**
  **Page 44**
  Use to attach microphone, character generator, etc.



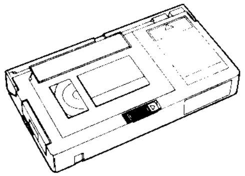
- **Shoulder frame CU-V430U**
  **Page 44**
  Mount on the GR-S707E to facilitate more stable on-shoulder operation.



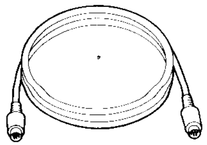
- **Compact video cassette SE-C30**
  **Page 5**
  Allows 30 minutes of recording and playback in SP mode, and 60 minutes of recording and playback in LP mode.



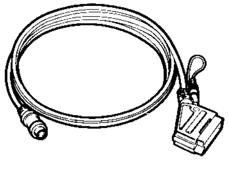
- **Cassette adapter C-P5U**
  **Page 41**
  Enables the SE-C30 compact video cassette to be used with regular S-VHS/VHS machines.



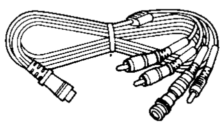
- **S-VIDEO cable VC-V44U**
  Use to connec the GR-S707E to a television set equipped with an S-VIDEO INPUT connector for PLAYBACK, or to an S-VHS recorder for dubbing.



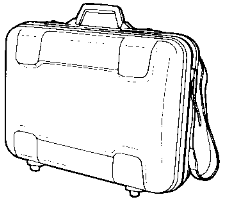
- **AV/S output cable VC-V8961SE**
  **Pages 34, 36, 38 and 46**
  Use to connect the VideoMovie to a TV or VCR equipped with a 21-pin connector for monitoring or dubbing/editing.



- **AV output cable VC-V837E**
  **Page 34.**

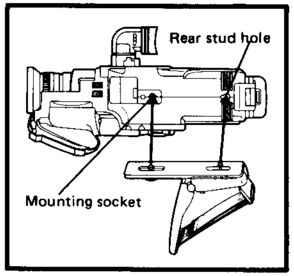


- **Carrying case CB-V57U**
  Use to carry the GR-S707E together with accessories.



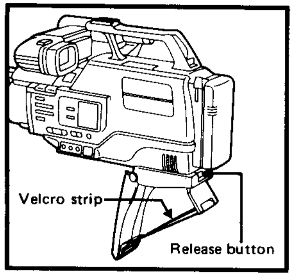
# USING OPTIONAL ACCESSORIES

Use the Shoulder Frame (optional) to facilitate more stable on-shoulder operation.


Rear stud hole
Mounting socket

- ●Align the mounting screw and stud of the shoulder frame with the VideoMovie's tripod mounting socket and rear stud hole.
- ●Open the Velcro strip and adjust it to comfortably fit the contours of the shoulder.

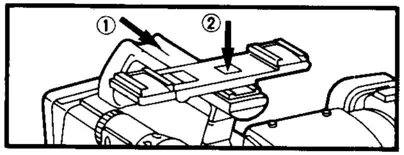
**Note:**
When the Shoulder Frame is left attached to the VideoMovie (during transportation or storage), be sure to release and close the support flat against the base plate.


Velcro strip
Release button

## Shoe adapter

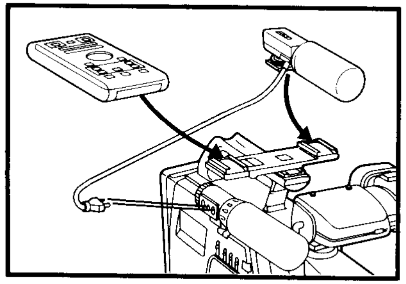
The shoe adapter allows attaching an external microphone and character generator.

1



Attach the shoe adapter as shown. Slide the shoe adapter while keeping the button ② pressed until it locks.

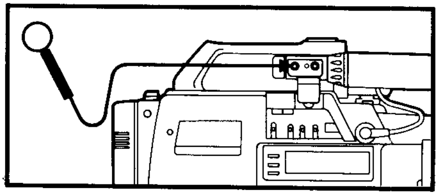
2



Attach the external microphone and/or character generator.

## External microphone

To use another microphone, do the following:



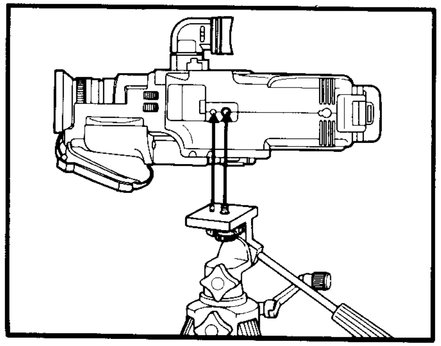
Plug the external microphone's cord into the MIC jack (STEREO or MONO).

- ●When using the optional wireless microphone unit, plug the cable of receiver unit into the MIC jack.

**●The recorded sound will be:**

| Microphone | Recorded soundtrack |
|---|---|
| ● Monaural mike connected to "STEREO" | ● L-channel only |
| ● Monaural mike connected to "MONO" | ● L & R channels (mono) |
| ● Stereo mike connected "STEREO" | ● L & R channels (stereo) |

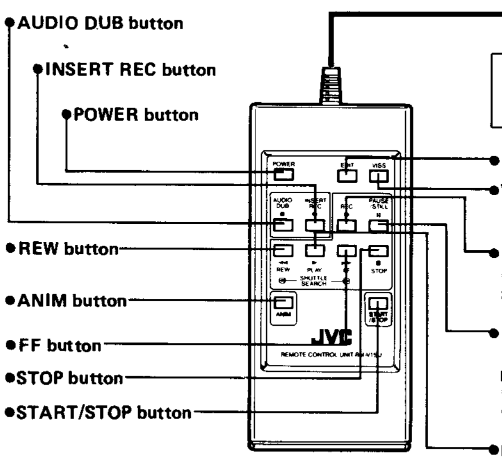
## Tripod mounting



Align the screw and camera direction stud of the tripod with the camera's tripod mounting socket and forward stud hole, and firmly tighten the screw.

## RM-V15U Remote Control Unit

The remote control unit RM-V15U (optional) permits VCR functions to be controlled from a distance.


●AUDIO DUB button
●INSERT REC button
●POWER button
●REW button
●ANIM button
●FF button
●STOP button
●START/STOP button
●Connect to REMOTE jack
POWER
EDIT
VISS
AUDIO DUB
INSERT REC
REC
PAUSE /STILL
REW
PLAY
FF
STOP
SHUTTLE SEARCH
ANIM
START /STOP
JVC
REMOTE CONTROL UNIT RM-V15U

Unless otherwise specified, the controls on the remote control unit function exactly as those on the VideoMovie.

**●EDIT button**

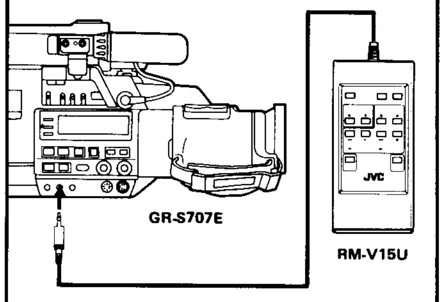
**●VISS button**
Press to mark an index code on the tape for later reference.

**●REC button**
Press together with PAUSE/STILL button to enter Rec Standby mode, then press PLAY to begin recording.

**●PAUSE/STILL button**
From the Pause mode press together with the INSERT REC button for insert recording.
Press this button to pause during recording and playback as well.

**●PLAY button**
Press for playback. To enter Rec mode, press together with REC button.

**Connecting the remote control**


GR-S707E
RM-V15U
JVC

- ●Plug the remote control cable of the remote control unit into the remote connector on the VideoMovie.

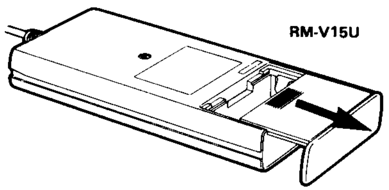
**Note:**
The Rehearsal mode cannot be engaged using this unit.

**Precautions**

- ●Avoid violent shocks, especially take care not to drop the unit.
- ●Take care not to allow liquid to spill into the unit.
- ●Do not place heavy objects on the unit.
- ●Avoid leaving the unit in places subject to direct sunlight or extremely high temperatures.

**Installing the batteries**

1. Slide the battery compartment cover on the rear of the unit in the direction of the arrow.



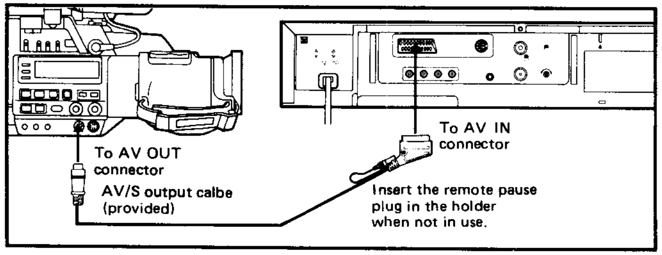
2. Insert 2 "R6"-size batteries (provided) in the correct directions into the battery compartment.
3. Replace the cover.

# USING THE GR-S707E AS A VIDEO CAMERA

*For continuous documentation of longer events, the GR-S707E can be used as an independent video camera in combination with either a deck-type or portable video recorder.*

## ① Using a recorder not equipped with a remote pause terminal

- Connect the AV OUT connector of the GR-S707E to the AUDIO and VIDEO IN connectors of the video recorder using the provided AV/S output cable VC-V8961SE.



**Operation**

1. Press the MONITOR button. The camera output signal is now available via the AV/S output cable.
2. Put the connected recorder in the Record mode. Recording will start. Tape start/stop should be controlled with the recorder's buttons.

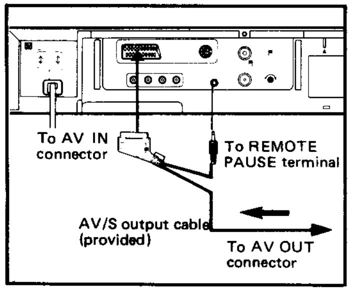
**Note:**

- In this configuration, it is possible to obtain a continuous recording and an edited-out recording of the same event simultaneously, because the GR-S707E's start/stop button only controls the tape inside the VideoMovie itself while the tape loaded in the connected recorder continues running. To record on the GR-S707E's tape, follow the same recording procedure as described before: press REC and the recording start/stop button.

## ② Using a recorder equipped with a remote pause terminal

For a JVC recorder with a remote pause terminal

- Connect the AV OUT connector of the GR-S707E to the AUDIO and VIDEO IN connectors and remote pause terminal of the video recorder using the provided AV/S output cable VC-V8961SE.



**Operation**

1. Press the MONITOR button.
2. Put the connected recorder in the Recording Standby (Record-Pause) mode.
3. Press the recording start/stop button of the GR-S707E to start recording.

**Notes:**

- To record on the GR-S707E's tape as well, press the REC button and then the recording start/stop button.
- Power is not supplied to the GR-S707E from the connected VCR. Independent power supply is required for both the GR-S707E and the VCR.
- If you stop recording by pressing the GR-S707E's recording start/stop button, the connected VCR also stops in the Pause mode. However, the pause command signal is not delivered to the connected VCR in the following cases and, consequently, the VCR will start automatically:
  (1) When the GR-S707E is switched off or its battery becomes discharged.
  (2) When the cable is disconnected.
  Therefore, before replacing the battery or tape for the GR-S707E, put the connected VCR either in the STOP or REC LOCK mode.

# SUPPLEMENTAL INFORMATION

**What is "colour temperature"?**

Light is composed of various colour components in different proportions. A relationship exists between the temperature of a light source and the colour components of the emitted light; as the temperature rises, the colour of the light varies from red, orange, yellow, white to blue in that order. "Colour temperature" is a value that expresses differences in colour among light sources, measured in Kelvin degrees. Bluish light has a higher colour temperature than reddish light.

**What is "white balance"?**

Making the colours look natural on TV is what white balance is all about. Because a camera is not as adaptable as the human eye, if a light source is reddish, white subjects in that light are recorded as reddish. White balance adjustment is performed to compensate for colour temperature variations of light so that whites are reproduced as white. Correct white balance makes all other colours correct. The GR-S707E can perform automatic white balance adjustment. However, if illumination is insufficient, white balance adjustment cannot be performed. To obtain correct colours therefore, sufficient illumination is essential.

**What is "illuminance"?**

"Illuminance" (also called 'luminance') is the intensity or brightness of light, expressed in lux The GR-S707E is designed to provide best pictures under the conditions of a 700-lux illuminance, although shooting is possible all the away down to 8 lux. To obtain good pictures in very bright light, the use of an ND (neutral density) filter is recommended (See chart on this page.)

**How to get good color pictures**

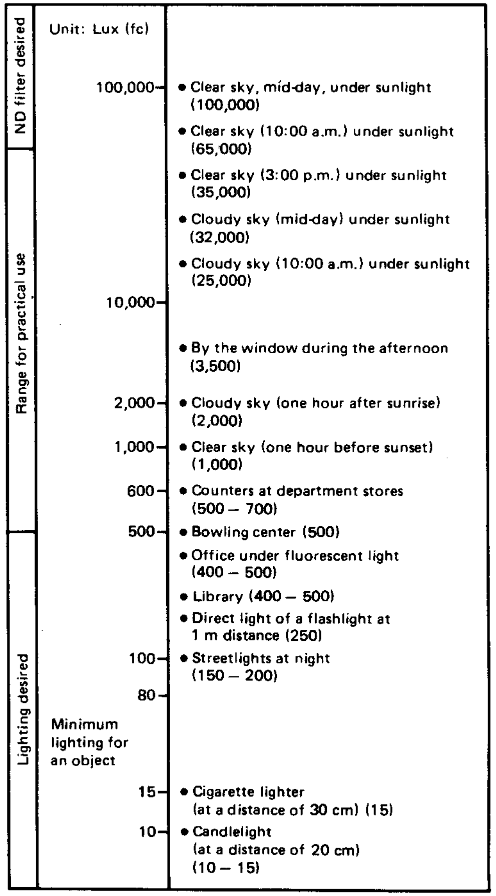
The simplest way is to provide sufficient lighting (close to the camera's reference illuminance) and accurately adjust the camera to the colour temperature of that lighting. If light sources of different colour temperatures are used together, accurate white balance adjustment is very difficult. For example, if natural light is mixed with artificial light, which is likely to occur next to windows, correct colours of the subject are difficult to obtain. It is recommended in such cases that curtains in the room be closed to shut out light from outside. Also, when artificial lighting devices are used, they should all have the same colour temperature. For example, it is recommended that incandescent or halogen lamps not be used together with fluorescent lighting.

**Colour temperatures of various artificial lighting**

| Type of illumination | | Colour temperature |
|---|---|---|
| Tungsten lamp for home use | | 2800 K |
| Tungsten lamp for photographic use | | 3200 K |
| Quartz-halogen lamp | | |
| Blue lamp for photographic use | | 5000 K |
| Fluorescent lamp | Warm white | 3500 K |
| | White | 4500 K |
| | Daylight type | 6500 K |

**Illuminance chart**

- The values on this chart are approximated to give you a rough reference.



# IN CASE OF DIFFICULTY

What may initially appear to be trouble is not always a real problem. Make sure first . . . .

| Symptoms | Check points |
|---|---|
| **Power** | |
| No power is supplied | ● Is the battery pack correctly installed?<br>● Is the battery pack charged?<br>● Is the power supply unit correctly connected?<br>● Is the POWER switch of the connected AC adapter set to ON? |
| **Recording** | |
| Recording is impossible. | ● Check to see if the cassette safety tab is in place. See page 5. |
| Picture colours greatly differ from actual subject colours. | ● If in the manual white balance mode, check the setting of the W. BALANCE button. |
| No sound is recorded with an external microphone. | ● Is the microphone's switch set to ON?<br>● If the ALC switch is set to OFF, is the Hi-Fi REC LEVEL control turned to its lowest setting? |
| Recording does not start. | ● Have you pressed the REC button first? |
| **Playback** | |
| Tape is running, but no playback picture appears. | ● Is the TV/VIDEO switch of the RF unit set to VIDEO?<br>● Is the TV receiver set to your video channel?<br>● If A/V connection is used, is the TV's VIDEO/TV switch set to VIDEO? |
| Noise bars appear in the playback picture. | ● Use the TRACKING control buttons to reduce noise bars. |
| Soundtrack on the Hi-Fi audio track cannot be reproduced. | ● Is the AUDIO OUT select button set to NORM?<br>– Set it to Hi-Fi. |
| Playback picture and/or Hi-Fi audio is blurred or interrupted. | ● Video heads may be dirty or worn out. For head cleaning or replacement, consult the nearest JVC Service Dealer. |
| **Tape transport** | |
| Tape stops during fast forward or rewind. | ● Is the "MEMORY" indication visible in the recorder section LCD? If so, press the MEMORY button to cancel the memory function. |
| Rewinding or fast forwarding is impossible. | ● Check to see if the tape has already been fully wound on one reel or the other. |
| **Other** | |
| No function is available with more than two mode indicators lit. | ● If this should happen when using power supply units other than the battery pack, turn their POWER switch on and off.<br>With a battery pack, replace it with another charged one. |
| Vertical white lines appear when shooting a very bright object. | ● This may occur when the background contrasts very much with the object. This is normal. |
| Picture is blurred in Quick Review or Retake mode. | ● Is the SP/LP recording mode select switch properly set? |

The GR-S707E is a microcomputer-controlled device. External noise and interference might prevent it from functioning properly. In such cases, first disconnect its power supply unit (battery pack, AC power adapter, etc.); and then reconnect it and proceed as usual from the beginning.

# SPECIFICATIONS

| | |
|---|---|
| Format | : SVHS / VHS PAL standard with Hi-Fi audio |
| Power source | : DC 9.6 V ⎓ |
| Power consumption | : 12 W |
| Signal system | : PAL-type colour signal and separated Y/C signals conforming to PAL standard |
| Video recording system | : Rotary, two-head helical scan system with slant double-azimuth combination video heads<br>Luminance: FM recording<br>Colour: Converted sub-carrier direct recording<br>Conforms to SVHS standard |
| Hi-Fi audio recording system | : Deep-layer recording system conforming to stereo Hi-Fi VHS standard |
| No. of audio channels | : 2 Hi-Fi audio channels<br>1 normal audio channel |
| Cassette | : SVHSC / VHSC cassette |
| Tape speed (SP) | : 23.39 mm/sec |
| (LP) | : 11.70 mm/sec |
| Recording time | |
| Max. (SP) | : 30 minutes (with SE-C30 cassette) |
| (LP) | : 60 minutes (with SE-C30 cassette) |
| **VIDEO** | |
| Output | : 1 Vp-p, 75 ohms, unbalanced (via AV connector) |
| Input | : 0.5 to 2.0 Vp-p, 75 ohms, unbalanced |
| S/N ratio | : More than 43 dB (with Rohde & Schwarz noise meter) |
| **AUDIO** | |
| Output | : -6 dBs, 1 k-ohm (via AV connector) |
| Input | : -8 dBs, high impedance |
| Microphone input | : -68 dBs, high impedance, unbalanced |
| **Hi-Fi AUDIO** | |
| Frequency response | : 20 Hz to 20,000 Hz |
| Dynamic range | : More than 80 dB |
| Wow and flutter | : Less than 0.005 % WRMS |
| Pickup | : 1/2" format CCD |
| Minimum required illumination | : 8 lux (at F/1.2) |
| Illumination range | : 8 – 100,000 lux |
| Lens | : F1.2 f = 9 – 72 mm, 8:1 two-speed power zoom lens with auto iris control and macro position, filter diameter 52 mm |
| Viewfinder | : Electronic viewfinder with 0.7" black/white CRT |
| Selectable high-speed shutter | : Switchable (1/250, 1/500, 1/1000 sec.) |
| Color temperature switching | : Switchable (3,200 K/4,500 K/5,500 K) |
| White balance adjustment | : Full-auto/preset standard |
| Operating temperature | : 0°C to +40°C |
| Operating humidity | : 35 % to 80 % |
| Storage temperature | : -20°C to +50°C |
| Weight | : 2 kg (with viewfinder) |
| Dimensions | : 196(W) x 181(H) x 376(D) mm (incl. viewfinder) |

### AA-V6EG SPECIFICATIONS

| | |
|---|---|
| Power requirement | : AC 110 – 240 V∿, 50/60 Hz |
| Power consumption | : 23 watts |
| Output | : DC 14 V ⎓ 1.1 A (Charge)<br>DC 9.6 V ⎓ 1.2 A (VideoMovie) |
| Charging system | : Constant current, peak detection, timer controlled |
| Dimensions | : 150(W) x 42(H) x 69(D) mm |
| Weight | : Approx. 380 g |

### C-P5U SPECIFICATIONS

| | |
|---|---|
| Type | : VHS cassette adapter |
| Dimensions | : 188(W) x 25(H) x 104(D) mm |
| Weight | : 240 g |
| Accessory | : "R6"-size battery x 1 |

**Provided accessories:**

| | |
|---|---|
| AC power adapter/battery charger | AA-V6EG |
| Cassette adapter | C-P5U |
| Cassette tape | SE-C30 |
| Battery pack | BN-V66RU |
| AV/S output cable | VC-V8961SE |
| Stereo earphones | |
| Shoulder strap | |
| Lens cap (white balance cap) | |
| Battery for clock operation | CR2025 |

**For optional accessories, refer to pages 42 and 43**

*Specifications shown are for SP unless otherwise specified.*
*Design and specifications subject to change without notice.*

# SECTION 1
# SERVICE CAUTIONS & DISASSEMBLY

## 1.1 PRECAUTIONS

1. Disconnect the power from the set before disassembling/re-assembling it and soldering parts.
2. When removing/installing fasteners such as screws, washers, etc., be careful not to drop them into the mechanism.
3. When disconnecting/connecting connectors, pay enough attention to wiring not to damage it before operation.
4. In general, resistors, shorting jumpers (0-ohm resistors), ceramic capacitors and diodes are chip parts, which can not be reused after they are once removed. (Refer to Section 1.3.)
5. Electrical adjustments are required after circuit parts and mechanical parts were replaced. Make sure to proceed to do such adjustments after completion of required repair and replacement as well as to do it with complete preparation of test equipment.
   Do not turn VRs of the camera section thoughtlessly. If any VR is once turned, it requires adjustments with all other VRs.
6. When installing parts, be careful not to do with other parts as well as not to damage others (pay the most careful attention to the video head assembly and the tape transport mechanism).
7. Pay enough attention to the CCD image sensor and the optical filters so that they won't be dusty, soiled or damaged. If it is soiled with fingerprints, etc., gently clean with silicone lens tissue.
8. When removing ICs, be careful not to damage circuit patterns.

## 1.2 REQUIRED TEST EQUIPMENT, FIXTURES/TOOLS AND OTHERS

For proper measurement, adjustment and maintenance, the following test equipment, fixtures/tools are strongly recommended to use besides general tools.

### 1.2.1 Test equipment, etc.

1. Color video monitor
2. AC power adapter (AA-V6EG/EK or equivalent)
3. Oscilloscope (dual-trace type, for more than 20 MHz)
4. Frequency counter
5. Audio tester and Audio signal generator
6. Vectorscope
7. Halogen lamps
8. Video signal generator
9. Sweep generator

- **Color bar signal**

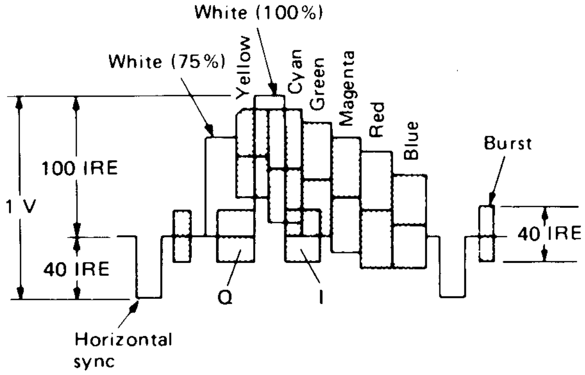


**Fig. 1-2-1** Color bar signal waveform

- **Color bar pattern**

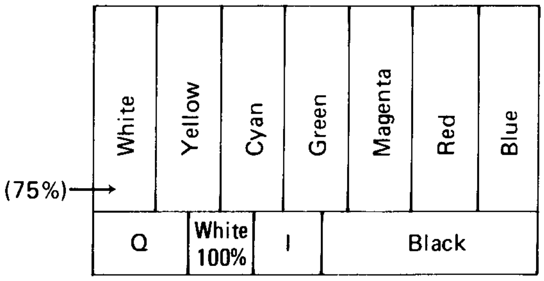


**Fig. 1-2-2** Color bar pattern

- **Color sweep signal**

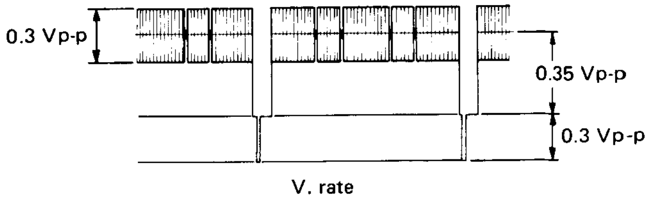
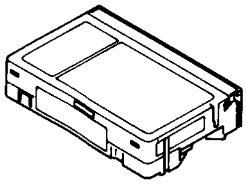
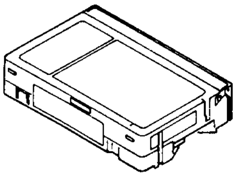
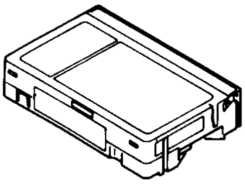
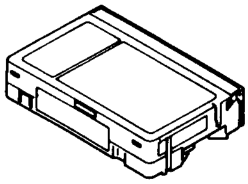
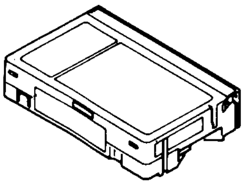
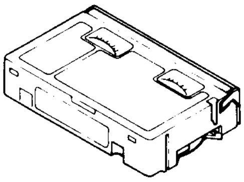
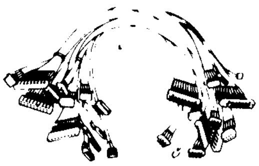
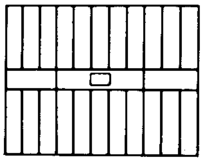
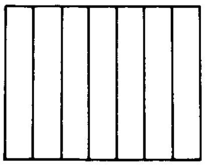
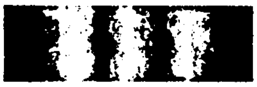
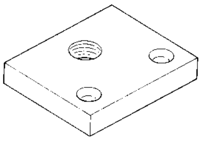
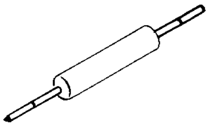
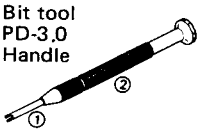
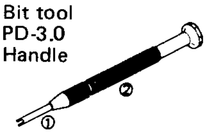
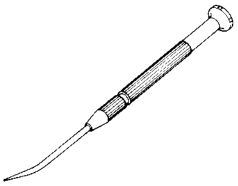
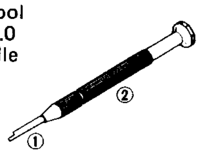
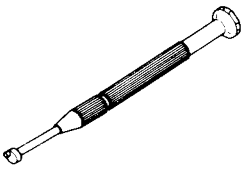
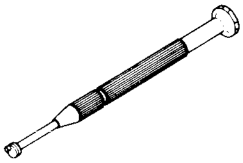
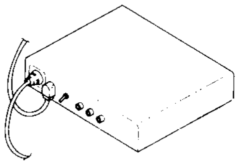
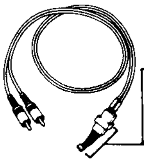
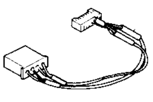
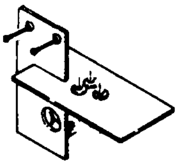
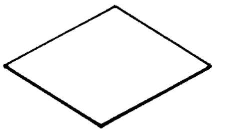


**Fig. 1-2-3** Color sweep signal

### 1.2.2 Special test equipment and tools required for adjustments

| | | | |
|---|---|---|---|
| Alignment tape<br>for SP interchangeability)<br>MHPE-C or MH-C2 | Alignment tape<br>for LP interchangeability<br>MHPE-LC | Alignment tape<br>for C. SP PB Y/C level<br>MHVE-2C or MH-C2 | Alignment tape<br>for S. SP PB Y/C level<br>MHVE-2HC or MH-C2H |
|  |  |  |  |
| Alignment tape<br>for C. SP PB FM audio level<br>MHAFE-C1 | Cassette torque meter<br>PUJ50431-2 | Patch cord set<br>YTU93022A | Gray scale pattern<br>Reflection type, 11 steps, $\gamma = 2.2$<br>GS-2AS or GS-2A |
|  |  |  |  |
| Color bar pattern<br>Reflection type, 7 colors<br>CC-2AS or CC-2A | Auto focus unit<br>Back focus adjusting chart<br>PUJ93944-2 | Camera holder<br>YTU93024 | Adjusting jig for compact VTR<br>YTU93004-2 |
|  |  |  |  |
| Chip parts replacing tool<br>YTU93004A (incl. ① & ② ) | Chip parts replacing tool<br>YTU93003B (incl. ① & ② ) | Chip IC replacing tool<br>PTS40844 | A/C head positioning tool<br>YTU93002A (incl. ① & ② ) |
| ① YTU93003-01<br>Bit tool<br>② PD-3.0<br>Handle<br> <br>Orders for ① and ② can be placed separately. | ① YTU93003-02<br>Bit tool<br>② PD-3.0<br>Handle<br> <br>Orders for ① and ② can be placed separately. |  | ① YTU93002-01<br>Bit tool<br>② PD-3.0<br>Handle<br> <br>Orders for ① and ② can be placed separately. |
| Back focus adjusting tool<br>PUJ37186A (for master lens) | Back focus adjusting tool<br>PUJ37186B (for auto focus) | Y/C separator<br>PUJ25579 | Cable for Y/C separator<br>YTU93006 |
|  |  |  | <br>To be replaced with the patch cord (YTU93027) for Y/C separator cable |
| Patch cord for Y/C separator cable<br>YTU93027 | Transmission coil<br>YTU93031A | CC10B filter (Kodak)<br>CC10B | |
|  |  |  | |

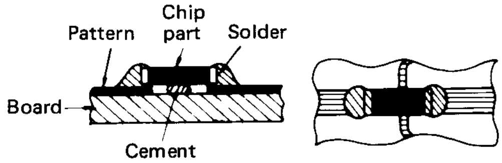
## 1.3 REPLACEMENT OF CHIP PARTS

For replacing chip parts, proceed as follows.
Use a well-insulated fine-tipped soldering iron (approx. 17 W, 130°C ~ 260°C in temperature).
In addition, it is recommended to use a soldering iron with solder absorber (55 W approx.) for convenience.

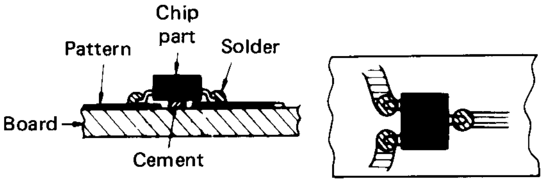
**Caution:**
- Do not apply heat for more than 3 seconds.
- Do not rub electrodes.
- Do not reuse chip parts removed once, discard them.
- Supplementary cementing is not required.

### 1.3.1 Soldered condition of chip parts

- Resistors, capacitors, etc.



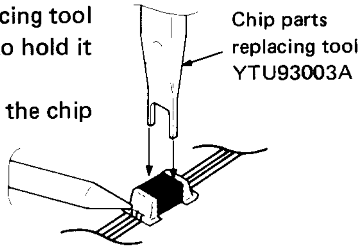
- Transistors, diodes, etc.



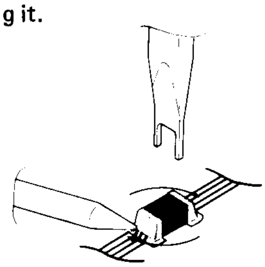
### 1.3.2 How to remove chip parts

- Resistors, capacitors, etc.

1. Set a chip parts replacing tool onto the chip parts to hold it down.
2. Unsolder at a side of the chip parts.

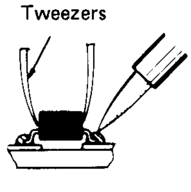


3. Remove the chip part by twisting and sliding it.

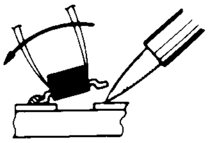


- Transistors, diodes, etc.

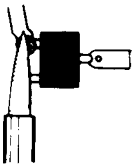
1. Unsolder at the one-lead side of the chip parts.



2. Lift the unsoldered side upward.



3. Heat the other two leads simultaneously and remove the chip parts upward.

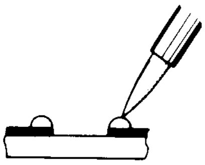


### 1.3.3 Preheating and soldering chip parts

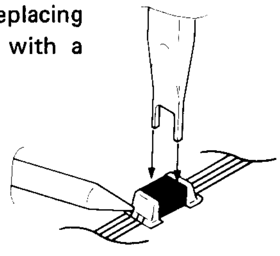
Just before soldering new chip parts except transistors, but capacitors including, preheat them with hot air (150°C approx.) by use of a blower type of hair dryer for about 2 minutes. Immediately after that, solder it with a soldering iron of 30 W approx.

### 1.3.4 How to set and solder chip parts

1. Presolder the contact points of the circuit pattern to which the chip parts will be soldered.

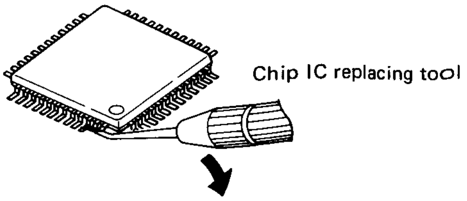


2. Hold down the chip parts with the chip parts replacing tool, then, solder it with a soldering iron.



## 1.4 REMOVING OF FLAT ICs
(Recommended method)

1. For removing solder chips from IC's pins, use a solder remover or a braided solder absorber.
2. Heat the IC's tips evenly by moving the chip IC replacing tool around them, and carefully separate the IC's leads with the tool as illustrated.
3. Do not reuse ICs removed once. (Discard them.)



## 1.5 DISASSEMBLY OF CAMERA SECTION

### 1.5.1 Electronic viewfinder (E. VF)

1. Disconnect the connector cable of the electronic viewfinder from the connector.
2. Turn the electronic viewfinder at an angle of 90° in the direction of the arrow mark Ⓑ.
3. Pushing the section Ⓐ with the tip of a screwdriver, slide the electronic viewfinder in the direction of the arrow mark Ⓒ.

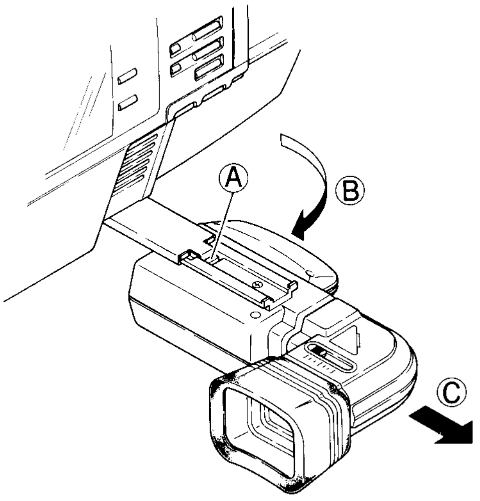


**Fig. 1-5-1** Electronic viewfinder

### 1.5.2 Microphone, Cassette cover and Front cover

1. Remove three screws Ⓐ and disconnect the connector Ⓑ, then detach the microphone.
2. Remove two screws Ⓒ and take off the cassette cover by sliding it in the direction of the arrow mark Ⓔ.
- When re-assembling the cassette cover, perform it as the cassette housing is in the Eject mode. (Refer to Section 1.6.6.)
3. Remove two screws Ⓓ and take off the front cover by sliding it in the direction of the arrow mark Ⓕ.
- When re-assembling the front cover, confirm that the front cover is hooked by three pawls of the main body.

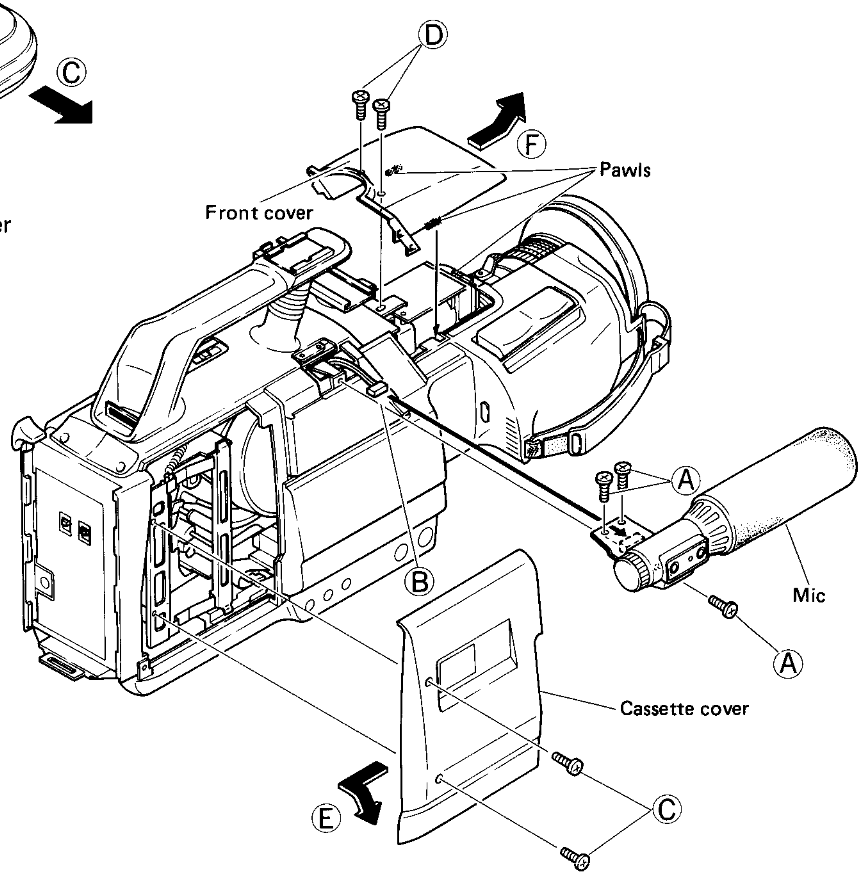


**Fig. 1-5-2** Microphone, cassette cover and front cover

### 1.5.3 Upper case

1. Remove two screws Ⓐ.
2. Remove a screw Ⓑ.
3. Remove three screws Ⓒ.
4. Remove a screw Ⓗ.
5. Remove a screw Ⓓ.
   After removing the above screws, lift the upper case upward and disconnect the flexible wire Ⓔ from the OPERATION board.
6. Disconnect the connector Ⓕ from CN303 of the CPU board.
7. Disconnect the connector Ⓖ, then the upper case can be taken off.
8. When fitting the upper case again, pay careful attention to the flexible wire not to contact the drum and to the connector Ⓖ not to contact the rotary parts of the VF holder.

### 1.5.4 Rear cover and Top cover

1. Remove three screws Ⓐ.
2. By drawing the rear cover in the direction of the arrow mark Ⓒ, the connector Ⓑ is disconnected and the rear cover can be taken off.
3. Remove a screw Ⓓ, and two screws Ⓔ.
   To disengage the pawls from the lower case, lift the top cover in the direction of the arrow mark Ⓖ. Then, take off the top cover gently with care not to damage the flexible wire Ⓔ shown in Fig. 1-5-3.
4. When re-assembling the top cover, first move the POWER switch and the EJECT switch in the direction of the arrow mark Ⓕ and fit it in the reverse manner of the disassembling.

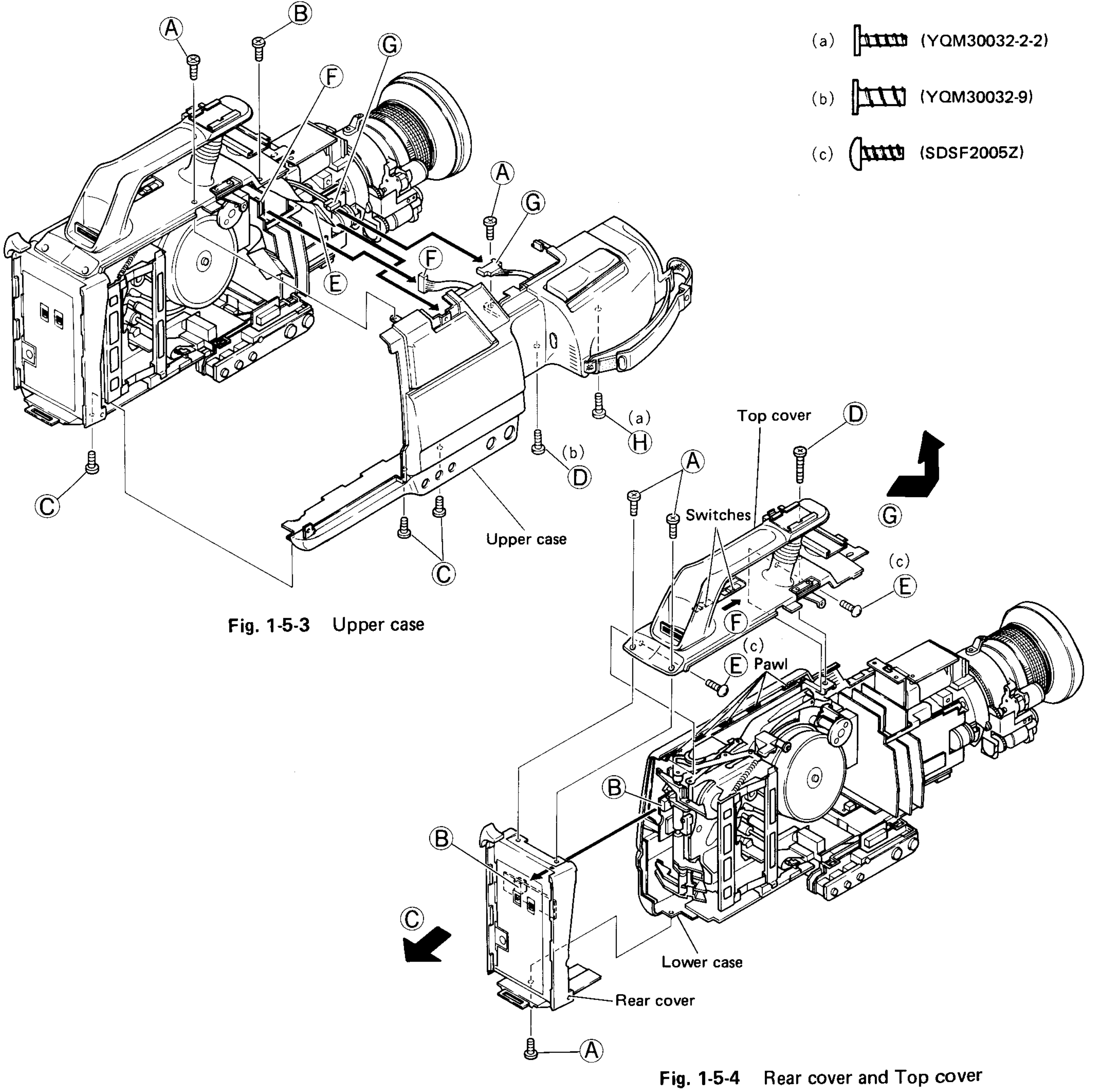


Fig. 1-5-3 Upper case

Fig. 1-5-4 Rear cover and Top cover

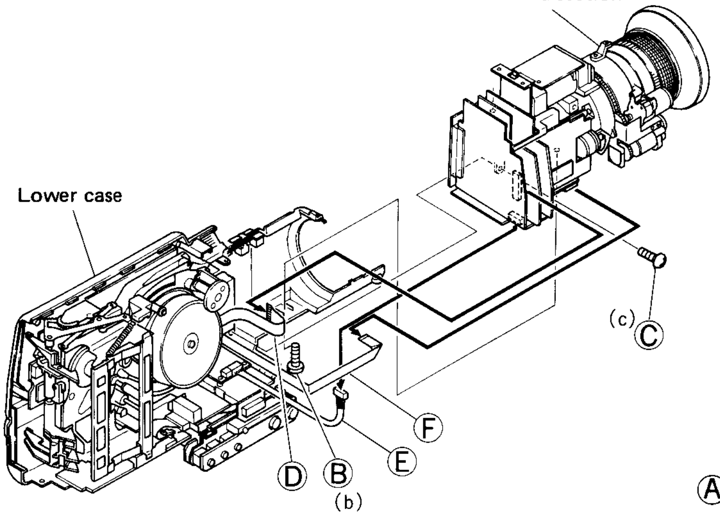
### 1.5.5 Camera section

1. Remove a screw Ⓑ and a screw Ⓒ.
2. Disconnect the flexible wire Ⓓ from CN308 of the CPU board, while disconnect the flexible wire Ⓕ from CN404 of the BOTTOM board.
3. Hold the camera section upward to disconnect the connector Ⓔ from CN307 of the CPU board.
4. Then, the camera section can be detached from the deck section.

### 1.5.6 Setup for troubleshooting and check of the camera section

After the camera section is separated from the main body by the procedure of 1.5.5, set up the camera section with patch cords for checkup and adjustment.
The CPU board can be exposed by removing a screw Ⓐ of the camera section.
The VIDEO board can be exposed by disconnecting connectors from CN204 of the VIDEO board and from CN402 of the BOTTOM board.
Connect patch cords ( ① through ⑤ in Fig. 1-5-6) as indicated below.

① CN3 of REAR board ⟷ CN7 of S/S board
② CN1 of SS board ⟷ CN1 of OPERATION board
③ CN3 of Y/C board ⟷ CN404 of BOTTOM board
④ CN803 of CTL board ⟷ CN308 of CPU board
⑤ CN204 of VIDEO board ⟷ CN402 of BOTTOM board


Camera section
Lower case
(c)
Ⓒ
Ⓕ
Ⓓ
Ⓑ
Ⓔ
(b)

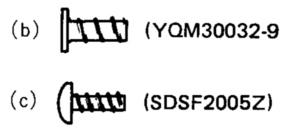

(b)
(YQM30032-9)
(c)
(SDSF2005Z)

Fig. 1-5-5 Camera section

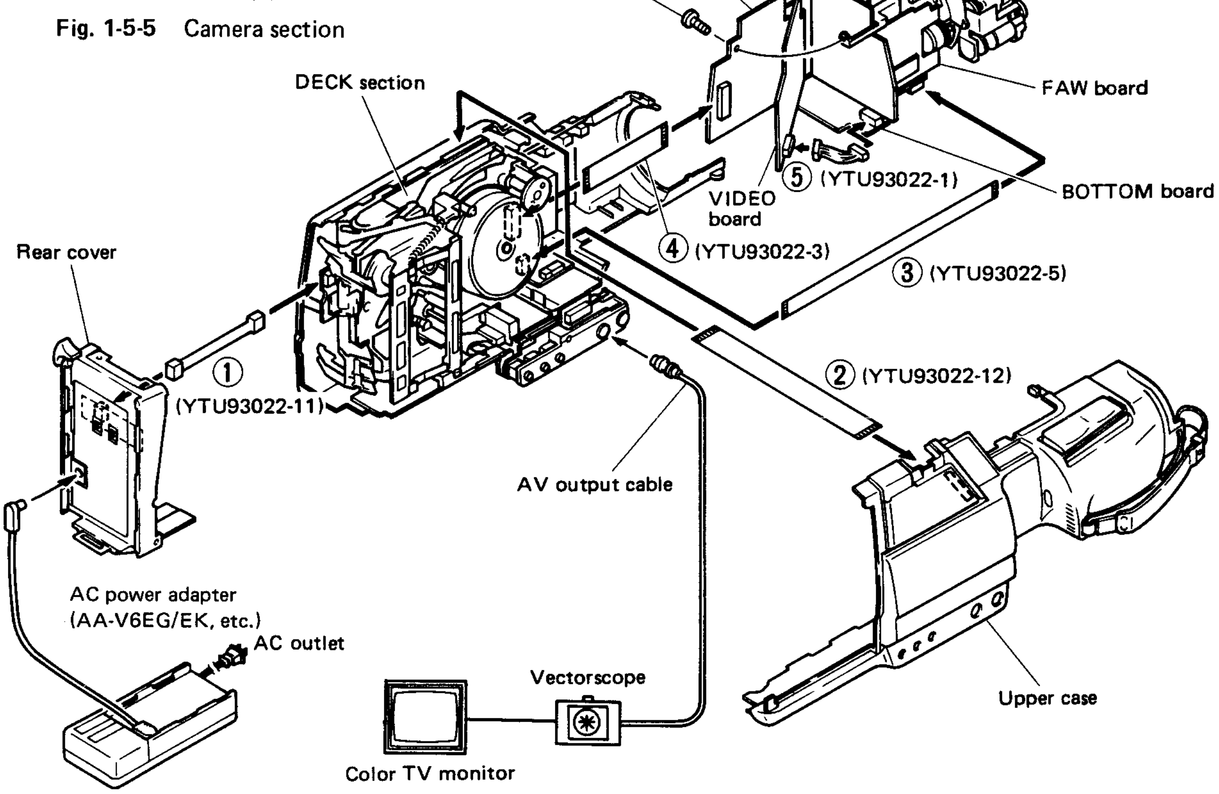

IMAGER board
CAMERA section
THD board
CPU board
Ⓐ
FAW board
DECK section
⑤ (YTU93022-1)
VIDEO board
BOTTOM board
④ (YTU93022-3)
③ (YTU93022-5)
Rear cover
① (YTU93022-11)
② (YTU93022-12)
AV output cable
AC power adapter (AA-V6EG/EK, etc.)
AC outlet
Vectorscope
Color TV monitor
Upper case

Fig. 1-5-6 Connection diagram of the camera section with patch cords

### 1.5.7 P.C. boards of camera section

For replacing the CCD image sensor (see Section 1.5.8 and 1.5.9), P.C. boards must be detached from the camera section.

1. CPU board
Remove a screw Ⓐ and disconnect the connector Ⓔ (between CN306 of CPU board and CN603 of THD board). To disconnect the connector Ⓔ, tilt the CPU board in the direction of the arrow mark Ⓠ.

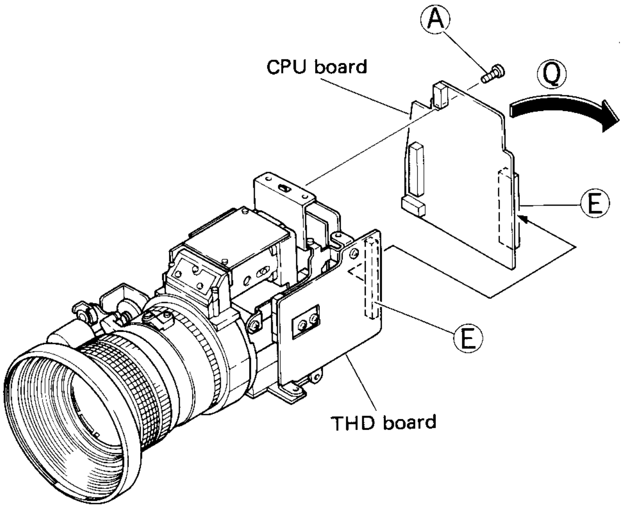

Ⓐ
CPU board
Ⓠ
Ⓔ
Ⓔ
THD board

Fig. 1-5-7A CPU board

2. VIDEO board
Disconnect the connector Ⓕ (between CN204 of VIDEO board and CN402 of BOTTOM board), and the connector Ⓖ (between CN206 of VIDEO board and CN602 of THD board). To disconnect the connector Ⓖ, tilt the VIDEO board in the direction of the arrow mark Ⓡ.

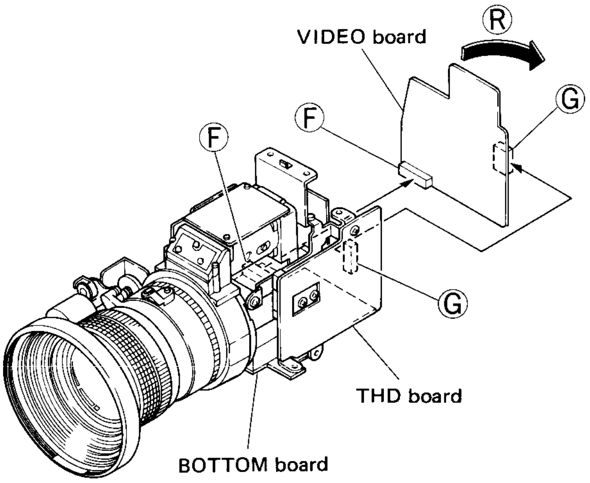

Ⓡ
VIDEO board
Ⓖ
Ⓕ
Ⓕ
Ⓖ
THD board
BOTTOM board

Fig. 1-5-7B VIDEO board

3. FAW board
Remove a screw Ⓑ and disconnect the connector Ⓗ (between CN504 of FAW board and CN405 of BOTTOM board).

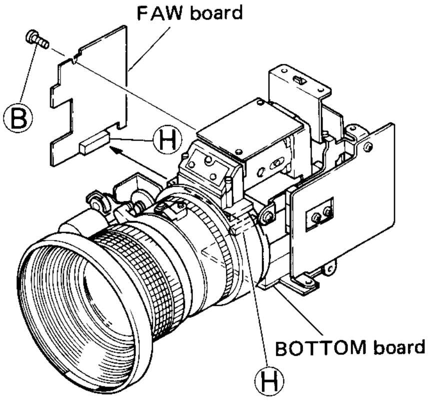

FAW board
Ⓑ
Ⓗ
BOTTOM board
Ⓗ

Fig. 1-5-7C FAW board

4. BOTTOM board
Remove two screws Ⓒ and disconnect the connector Ⓙ (between CN401 of BOTTOM board and CN104 of IMAGER board) and the connector Ⓚ (between CN406 of BOTTOM board and CN604 of THD board).

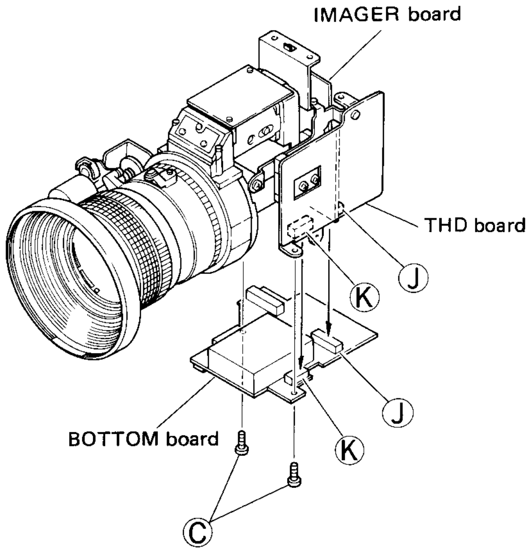

IMAGER board
THD board
Ⓙ
Ⓚ
Ⓙ
BOTTOM board
Ⓚ
Ⓒ

Fig. 1-5-7D BOTTOM board

5. THD board

Disconnect the connector Ⓛ (between CN601 of THD board and CN106 of IMAGER board), and then disconnect the connectors Ⓜ (CN611), Ⓝ (CN612) and Ⓟ (CN613).

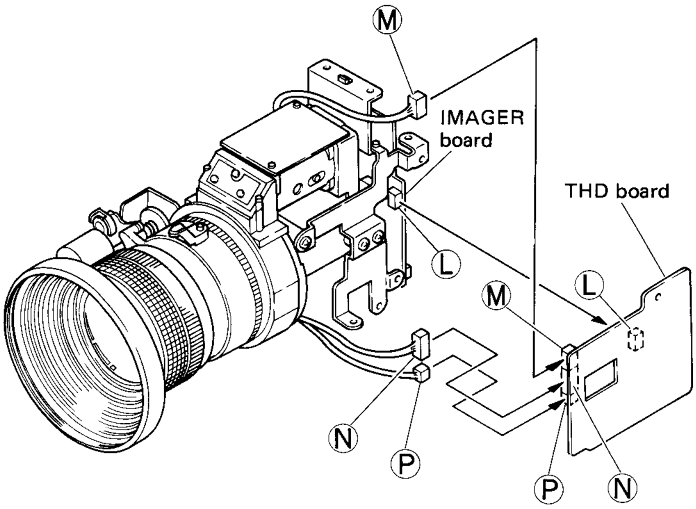

Ⓜ
IMAGER board
THD board
Ⓛ
Ⓜ
Ⓛ
Ⓝ
Ⓟ
Ⓟ
Ⓝ

**Fig. 1-5-7E** THD board

6. Location of P.C. boards of the camera section

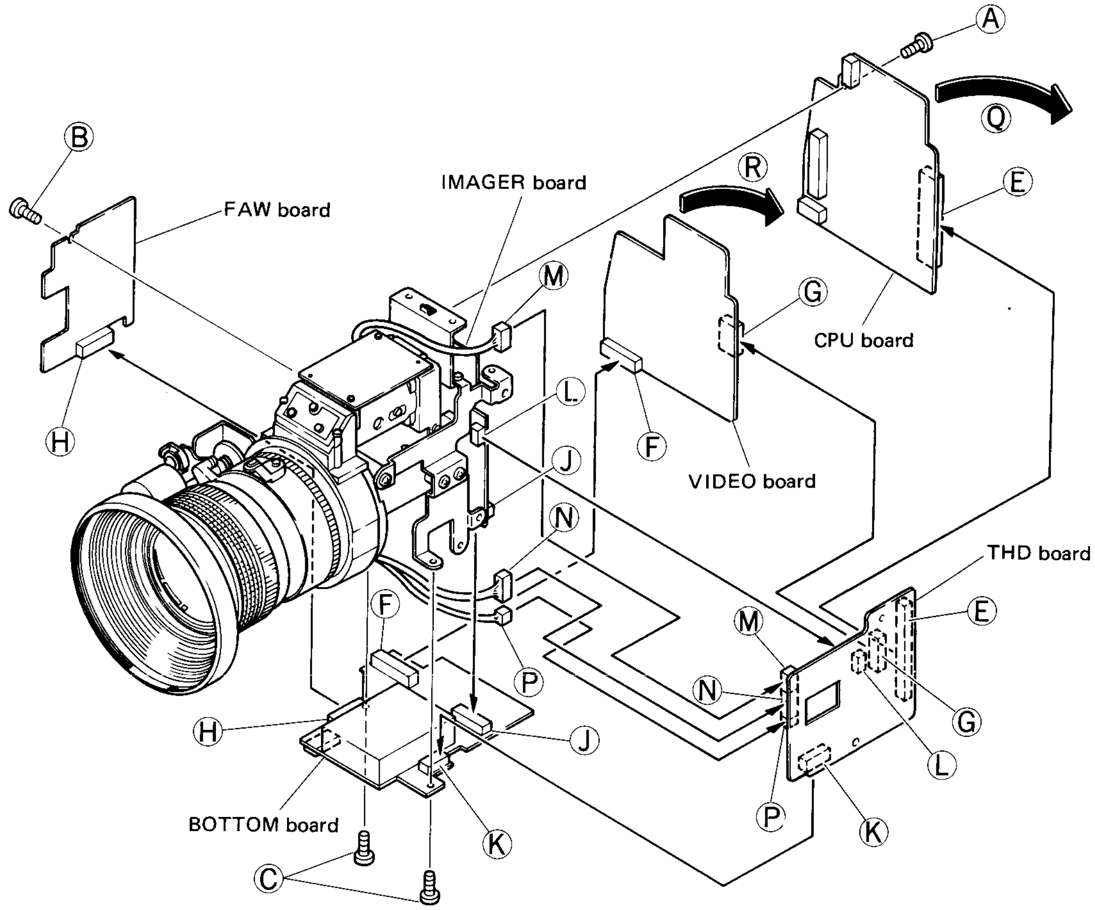

Ⓐ
Ⓠ
Ⓑ
FAW board
IMAGER board
Ⓡ
Ⓔ
Ⓜ
Ⓖ
CPU board
Ⓛ
Ⓗ
Ⓕ
Ⓙ
VIDEO board
Ⓝ
THD board
Ⓕ
Ⓔ
Ⓜ
Ⓟ
Ⓝ
Ⓖ
Ⓗ
Ⓙ
Ⓛ
Ⓟ
BOTTOM board
Ⓚ
Ⓚ
Ⓒ

**Fig. 1-5-7F** Location of P.C. boards of the camera section

### 1.5.8 Replacement of CCD image sensor

1. Disassembly of image sensor from optical block

1) Remove two screws Ⓐ fixing the IMAGER board to the optical block.
2) Remove two screws Ⓗ fixing the imager holder Ⓒ.
3) Remove three screws Ⓑ fixing the filter holder Ⓖ, and take off the optical low pass filter Ⓕ and rubber Ⓔ.
4) Unsolder the image sensor Ⓓ and remove solder chips, then take off the image sensor from the IMAGER board together with the imager holder Ⓒ.

2. Installing a new image sensor

**Note:**

- Pay the most careful attention to the CCD image sensor and optical filters so that they won't be dusty, soiled or damaged. If it is soiled with fingerprints, etc., clean gently with silicone lens tissue or chamois.
- A new CCD image sensor is shipped with the orange protection seal applied onto the optical filter. Remove it just before installing it into the optical block.

1) After removing the protection seal from the CCD image sensor Ⓓ, set it on the imager holder Ⓒ and then lay the space rubber E , optical filter Ⓕ and filter holder Ⓖ on the image sensor one after another. At that time, make sure of the setting position of each item referring to the following table.

| Parts Name | Setting position |
|---|---|
| Imager holder Ⓒ | Refer to arrow mark. |
| CCD image sensor Ⓓ | Set the side with marking up. |
| Space rubber Ⓔ | Set the IC side horizontally. |
| Optical filter Ⓕ | Set the marking to be positioned to OP block. |

2) Fix the filter holder Ⓖ to the imager holder Ⓒ with three screws.
3) Carefully insert the CCD image sensor's pins projecting over the imager holder Ⓒ into the IMAGER board, and after setting two screws Ⓐ into the imager holder Ⓒ, fix it with two screws Ⓗ.
4) Solder the CCD image sensor's pins to the IMAGER board. At that time, be careful not to apply excessive heat.
5) Fix the IMAGER board to the optical block with two screws Ⓐ.
6) After the above works are finished, check back focus function. (Refer to Sect. 3.5.1.)

### 1.5.9 Replacement of OP block

1. Remove P.C. boards of the camera section. (Refer to Sect. 1.5.7.)
2. Loosen two screws Ⓐ shown in Fig. 1-5-7 and take off the IMAGER board.
3. After replacing the optical block, assemble the boards in the reverse manner of disassembling.

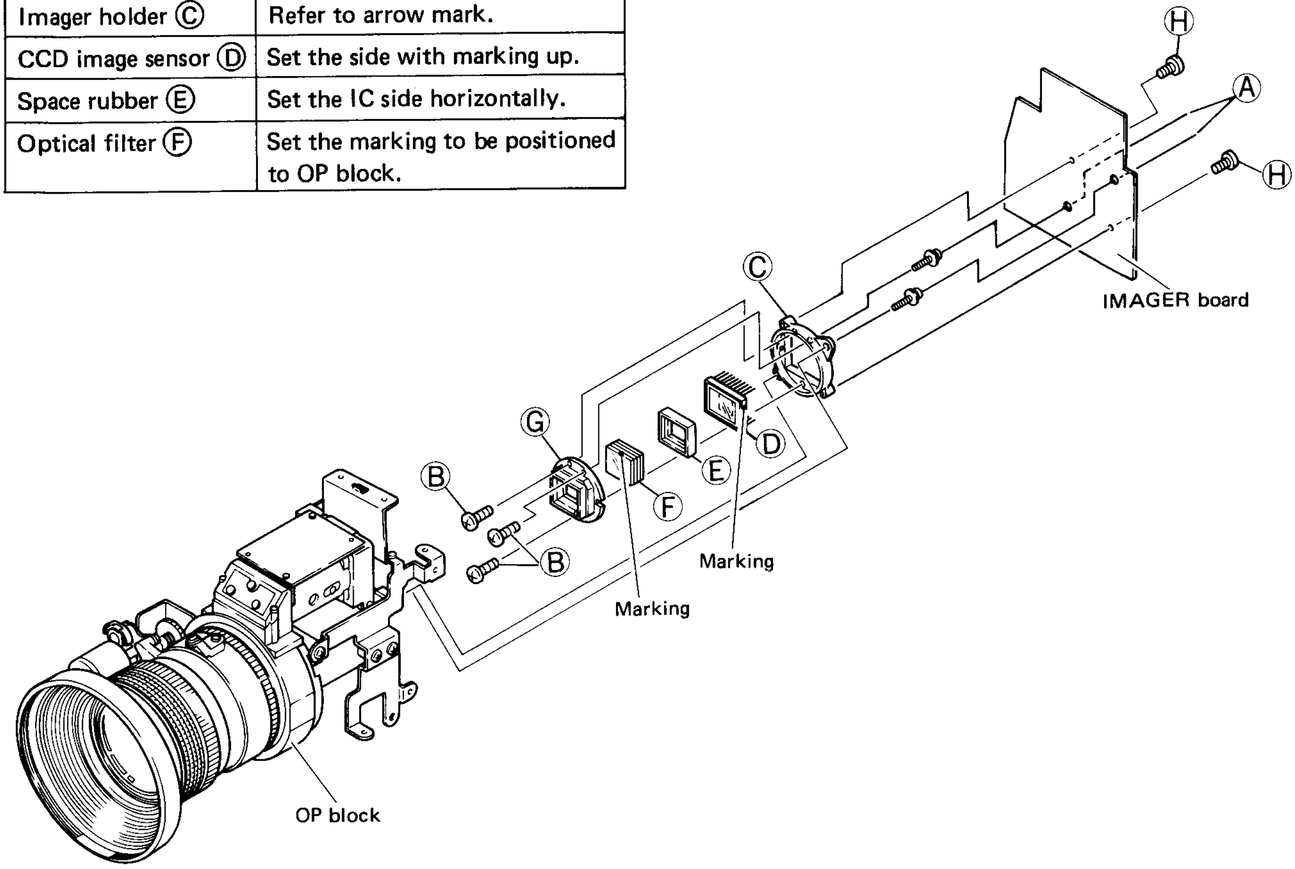


Fig. 1-5-8 CCD image sensor

### 1.5.10 Optical block main parts

1. Zoom motor assembly
1) By removing two screws Ⓐ, the zoom motor assy can be detached.
2) When re-assembling it:
   Adjust gearing of the gears Ⓑ and Ⓒ so that they gear with each other approximately by 2/3 of the teeth height.
   After re-assembling, quickly move the zoom lever between both ends of the telephoto side and wide-angle side to confirm no skipping in gearing.

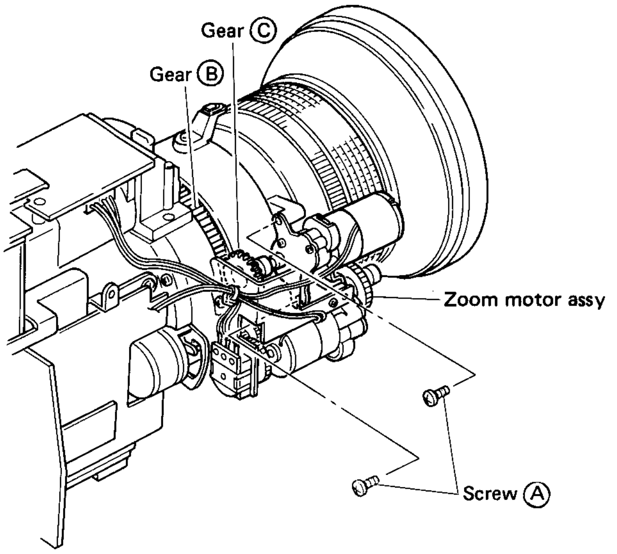


Fig. 1-5-10A

2. AF motor assembly
1) By removing two screws Ⓐ, the AF motor assy can be detached.
2) When re-assembling it:
   Adjust gearing of the gears Ⓑ and Ⓒ so that they gear with each other approximately by 2/3 of the teeth height.
   After re-assembling, quickly turn the focus ring from the intinite to the closest range and vice versa to confirm no skipping in gearing.

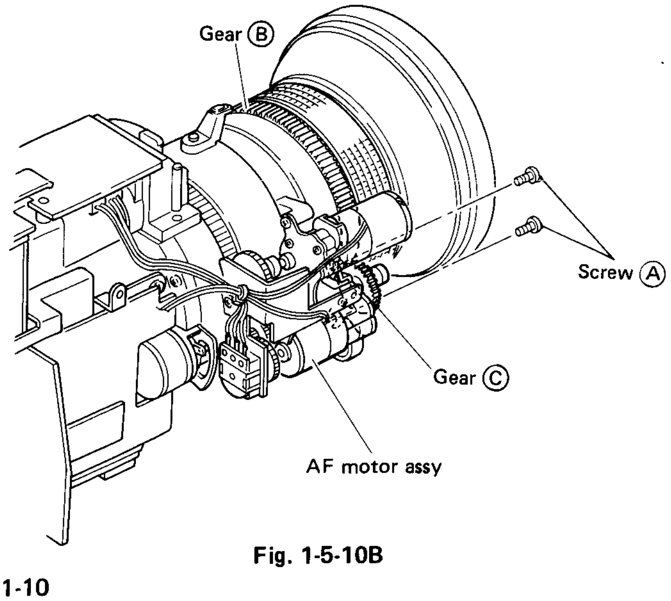


Fig. 1-5-10B

### 1.5.11 CRT for E. viewfinder

For disassembling the electronic viewfinder, refer to the exploded view diagram of the optical block (M6).

1. Connection of CRT connector

Connect the CRT connect by fitting its projection or notch to the CRT's marking.

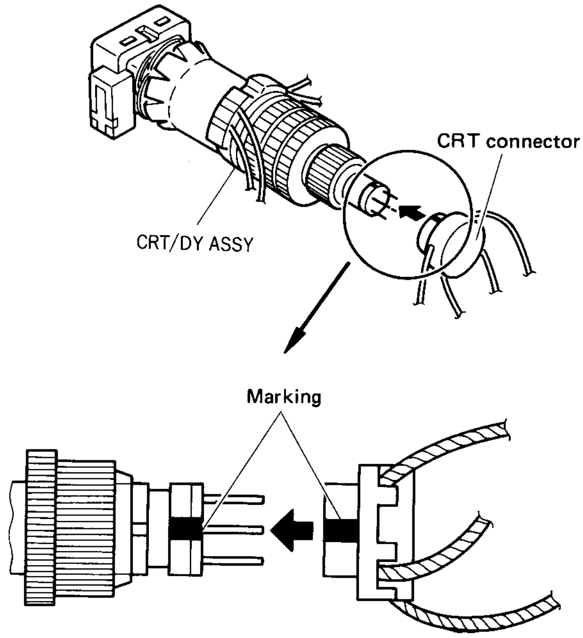


Fig. 1-5-11A

2. Connection with high tension connector

Securely perform the connection since the connector and the connected section are loaded with high voltage in operation.

The high tension cover is an important piece to shut out the high tension section from other parts, therefore, used one must be discarded and be replaced with a new high tension cover.

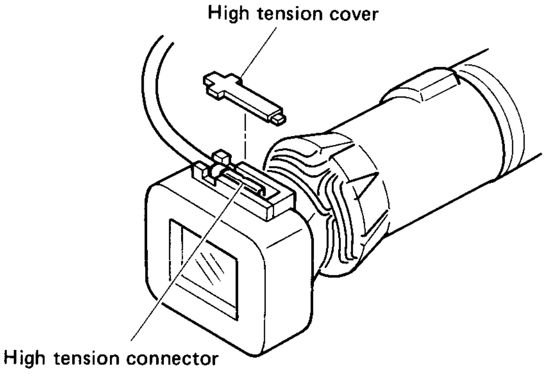


Fig. 1-5-11B

## 1.6 DISASSEMBLY OF DECK SECTION

The deck section must be disassembled after the camera section is disassembled (Sections 1.5.1 to 1.5.5).

### 1.6.1 Bottom cover

1. Remove two screws Ⓐ.
2. Disconnect the flexible wire Ⓑ from CN1 of the AV JACK board.
3. Move the bottom cover in the direction of the arrow mark Ⓓ and disconnect the flexible wire Ⓒ from CN3 of the AUDIO board.
4. Then, the bottom cover can be taken off.
5. When re-assembling the bottom cover, set it making sure of the position to slide it.

### 1.6.2 Lower case

1. Remove three screws Ⓐ.
2. Take off the lower case paying attention to the connector Ⓑ (connecting CN7 of Y/C board and CN808 of CAM CTL board).

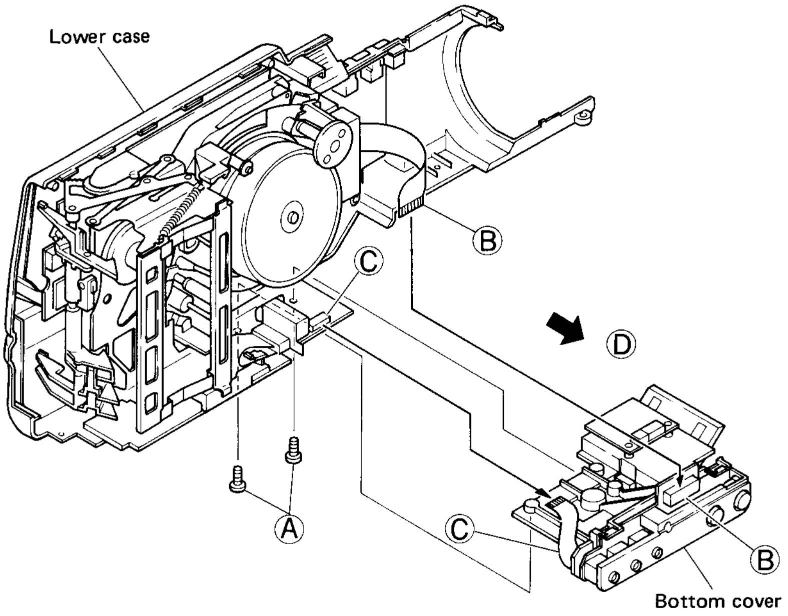
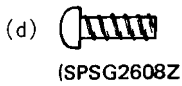

Lower case
Ⓑ
Ⓒ
Ⓓ
Ⓐ
Ⓒ
Ⓑ
Bottom cover

Fig. 1-6-1 Bottom cover


(d)
(SPSG2608Z)

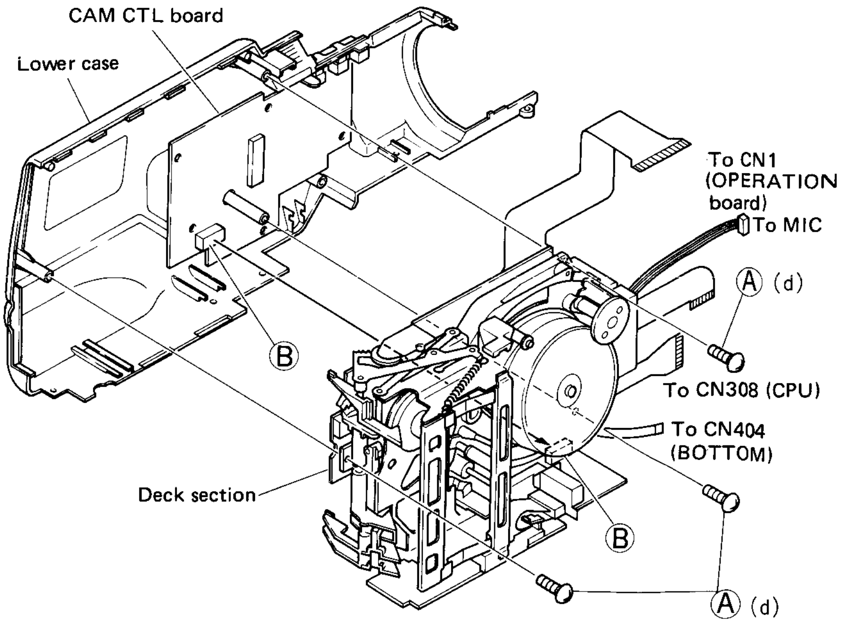

CAM CTL board
Lower case
To CN1 (OPERATION board)
To MIC
Ⓐ (d)
To CN308 (CPU)
To CN404 (BOTTOM)
Ⓑ
Deck section
Ⓑ
Ⓐ (d)

Fig. 1-6-2 Lower case

### 1.6.3 Setup for troubleshooting and check of the deck section

Set up the deck section with patch cords for check and adjustment after it is disassembled from the main body by the procedure of Sections 1.6.1 and 1.6.2.

To connect patch cords, expose the Y/C board by removing a screw Ⓐ (with a washer) from the center of the Y/C board and disconnecting the connector connecting CN2 of the Y/C board and CN6 of the S/S board besides disconnecting the flexible wire from CN4 of the Y/C board.

For adjustment of the deck section, VRs can be adjusted without exposing the Y/C board.

**Note:** When using a patch cord ⑥, the playback picture may disappear. If so, add a wire between chassis and GND on the Y/C board.

Connect patch cords (① through ⑦ shown in Fig. 1-6-3) as indicated below.

① CN3 of REAR board ←——→ CN7 of S/S board
② CN6 of S/S board ←——→ CN4 of Y/C board
③ CN5 of Y/C board ←——→ CN1 of AV JACK board
④ CN1 of S/S board ←——→ CN7 of OPERATION board
⑤ CN3 of AUDIO board ←——→ AV JACK board
⑥ CN4 of Y/C board ←——→ CN1 of PREAMP board
⑦ CN3 of Y/C board ←——→ Y/C separator

Before operation, pay attention to the impedance roller (Ⓑ in Fig. 1-6-5A) located on the upper left of the deck not to touch the base and other parts.

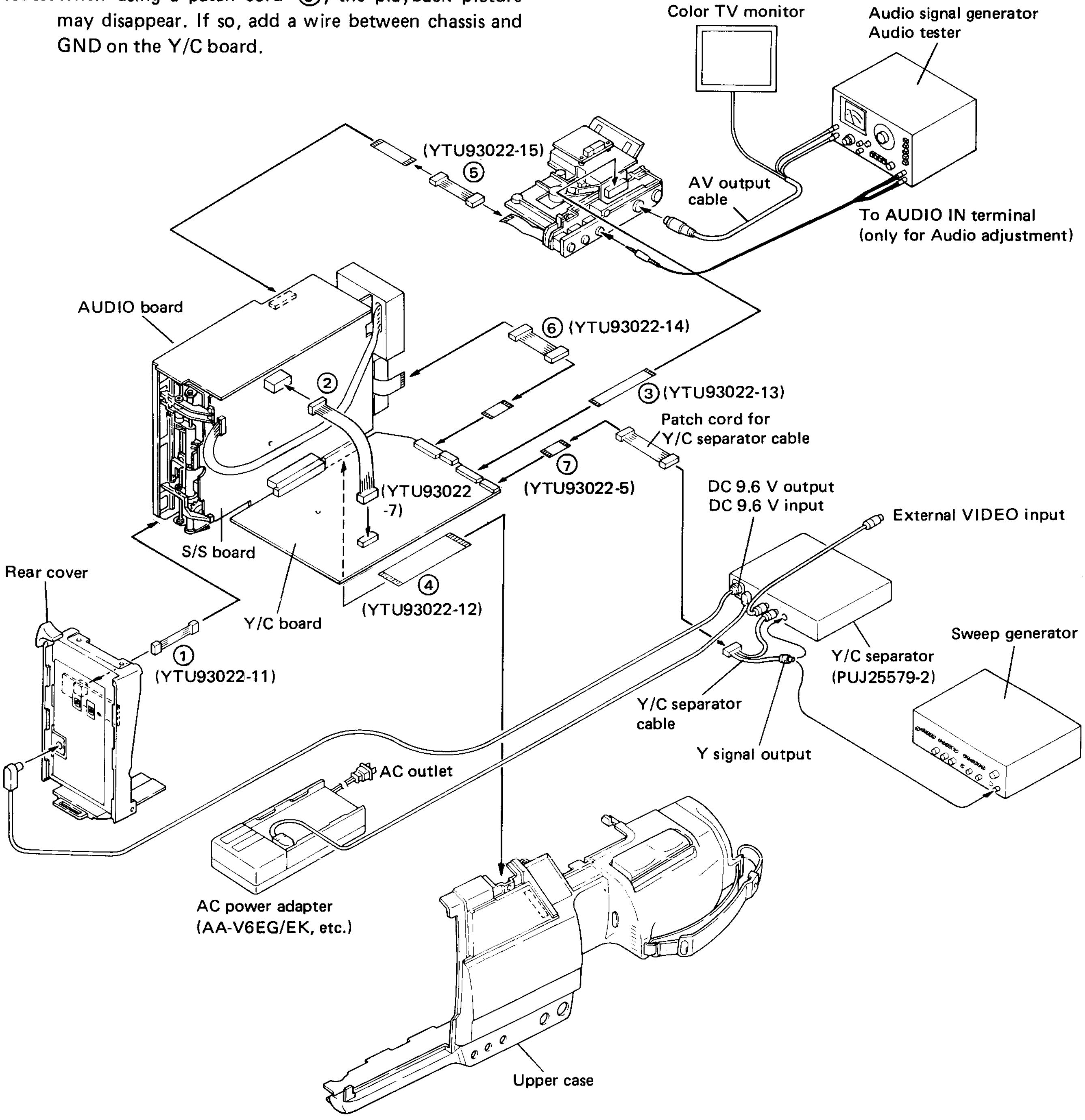

Color TV monitor
Audio signal generator
Audio tester
(YTU93022-15)
⑤
AV output cable
To AUDIO IN terminal (only for Audio adjustment)
AUDIO board
⑥ (YTU93022-14)
②
③ (YTU93022-13)
Patch cord for Y/C separator cable
⑦
(YTU93022 -7)
(YTU93022-5)
DC 9.6 V output
DC 9.6 V input
External VIDEO input
S/S board
Rear cover
④
(YTU93022-12)
Y/C board
①
(YTU93022-11)
Sweep generator
Y/C separator (PUJ25579-2)
Y/C separator cable
Y signal output
AC outlet
AC power adapter (AA-V6EG/EK, etc.)
Upper case

Fig. 1-6-3 Setup of the deck section with patch cords

### 1.6.4 P.C. boards of deck section

In order to check up and adjust phase of the mechanism (see Section 1.6.7), disassemble P.C. boards from the deck section.

1. Y/C board
Remove a screw Ⓐ and disconnect the connector Ⓕ (connecting CN4 of Y/C board and PREAMP board), connector Ⓖ (between CN2 of Y/C board and CN6 of S/S board), and connector Ⓗ (between CN1 of Y/C board and CN2 of S/S board).
To disconnect the connector Ⓗ, tilt the Y/C board in the direction of the arrow mark Ⓢ.

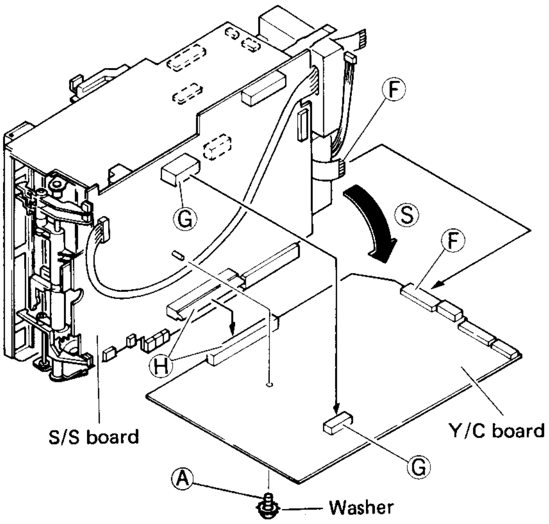


**Fig. 1-6-4A** Y/C board

2. AUDIO board
Remove a screw Ⓑ and disconnect the connector Ⓙ (connecting CN1 of AUDIO board and CN4 of S/S board), connector Ⓚ (between CN5 of AUDIO board and A/C head), connector Ⓛ (between CN2 of AUDIO board and PRE-AMP board), and connector Ⓜ (between CN4 of AUDIO board and CN701 of MIC AMP board).

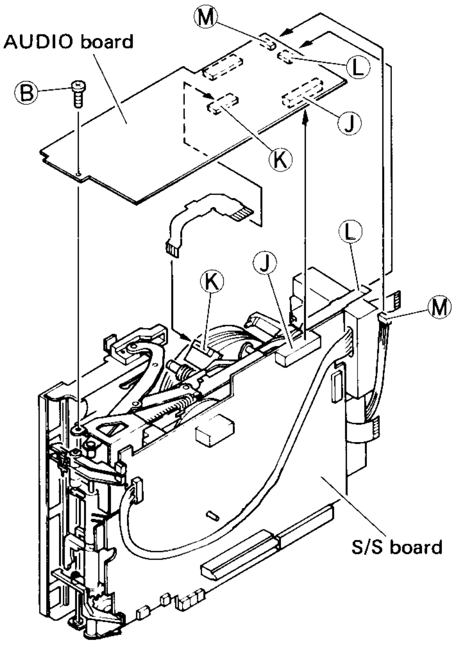


**Fig. 1-6-4B** AUDIO board

3. S/S board
Remove a screw Ⓒ, a screw Ⓓ and a screw Ⓔ and disconnect the connector Ⓝ (between CN5 of S/S board and the capstan motor), connector Ⓟ (between CN3 of S/S board and the drum motor), connector Ⓠ (between CN13 of S/S board and the loading motor), connector Ⓣ (between CN14 of S/S board and the DC-DC converter), and five connectors Ⓡ.

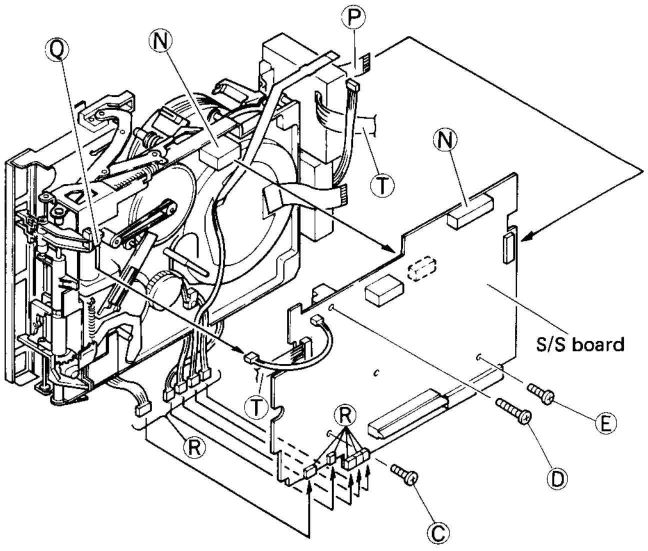


**Fig. 1-6-4C** S/S board

4. Location of P.C. boards of the deck section

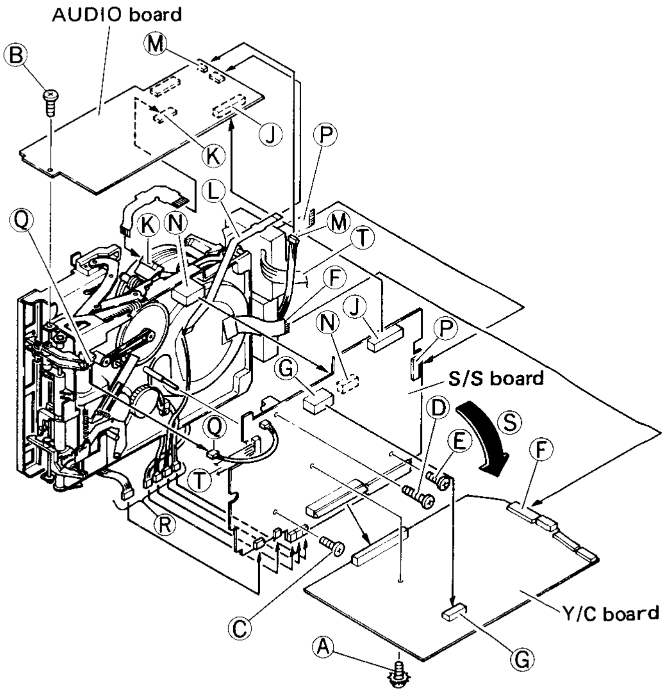


**Fig. 1-6-4D** Location of P.C. boards of the deck section

### 1.6.5 Replacement of cassette housing

Replacement of the cassette housing must be performed after the procedure of Sections 1.5.2 to 1.5.4 was finished. By removing five screws Ⓐ shown in Fig. 1-6-5A, the cassette housing can be detached from the deck section.

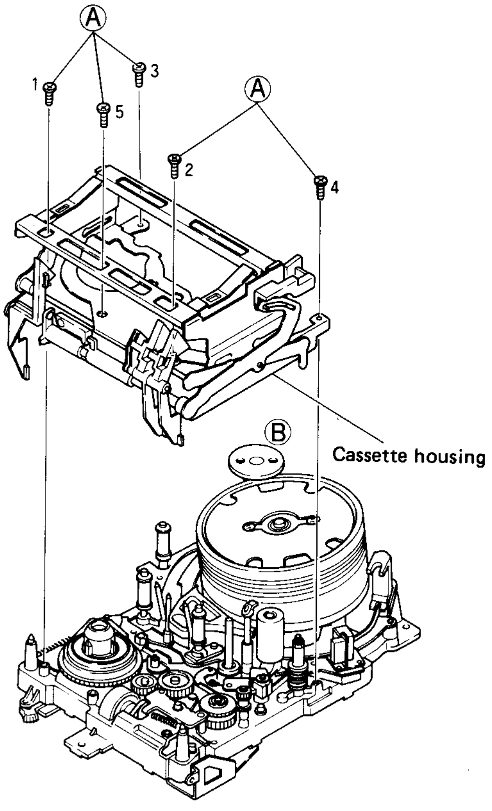
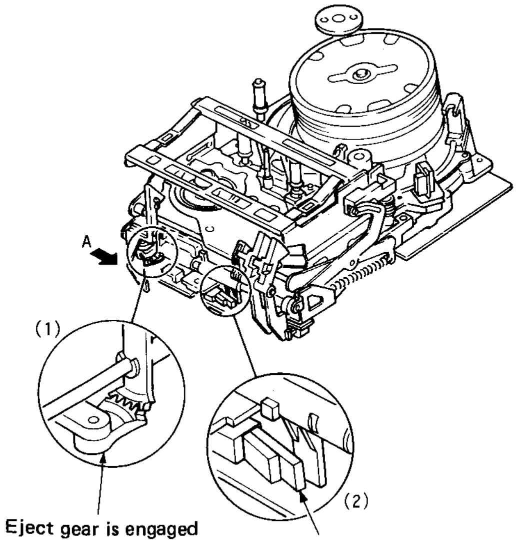


Fig. 1-6-5A Cassette housing

After replacement of the cassette housing is completed, check the following things in the condition the cassette housing is closed.

1) Phase of the eject gear
2) Position of the leaf switch
3) Order of screwing (see Fig. 1-6-5A)



Eject gear is engaged as shown above.

Leaf switch is positioned above the lever.

Fig. 1-6-5B

### 1.6.6 Manual setting of cassette housing to Eject mode

Without use of the EJECT switch of the main body, set the cassette housing to the Eject mode as shown in Fig. 1-6-6.

1. Take off the cassette cover. (Refer to Sect. 1.5.2.)
2. Push the pawl Ⓐ with the tip of a screwdriver, etc., in the direction of the arrow mark Ⓑ.

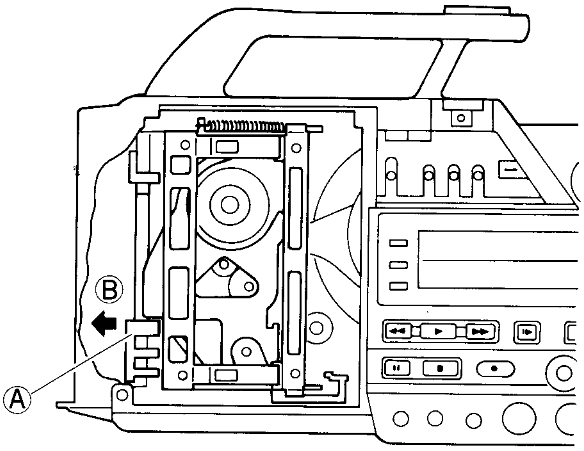


Fig. 1-6-6

### 1.6.7 Check and adjustment of phase of mechanism

When re-assembling the mechanism components, proceed to adjust the phase of the mechanism in the following order.

1. Phase of loading ring and Ring idler gear

1) Set the take-up loading ring and supply loading ring so that their holes coincide with the positioning hole of the lower part of the deck, and insert a thin stick (3 mm dia. such as a precision screwdriver) through the holes to fix the positions. Do not remove the stick until the positioning of the following item No. 4 is completed.
2) Adjust the phase of the Ring idler gear-1 and gear-2 as shown in Fig. 1-6-7A.

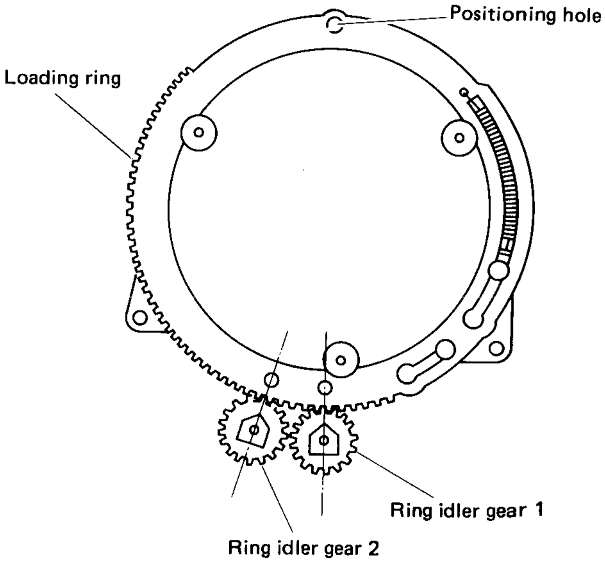


Fig. 1-6-7A

2. Position of control cam
After aligning the position of the control cam so that its hole coincides with the positioning hole of the chassis, install the gear box.

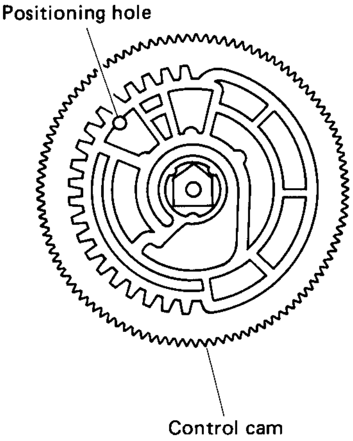

Positioning hole
Control cam

Fig. 1-6-7B

3. Phase of the loading gear assy
Set the loading gear assy so its hole is positioned in a straight line to the section Ⓐ of the chassis.

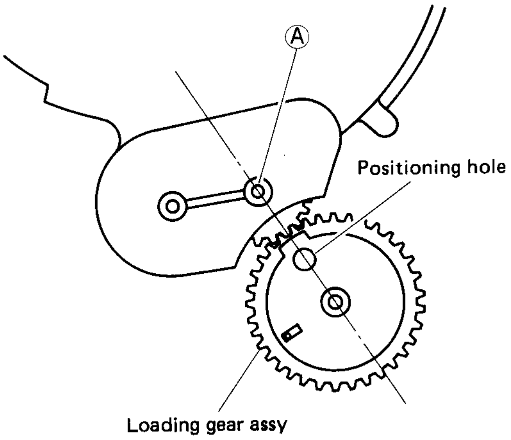

Ⓐ
Positioning hole
Loading gear assy

Fig. 1-6-7C

4. Correlative position of toggle lever and cancel lever
1) Set the toggle lever so that its hole aligns with the positioning hole of the chassis.
2) Set the cancel lever as shown in Fig. 1-6-7D.

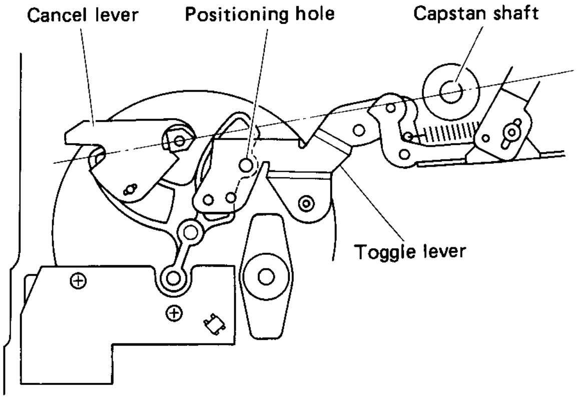

Cancel lever
Positioning hole
Capstan shaft
Toggle lever

Fig. 1-6-7D

5. Position of timing belt

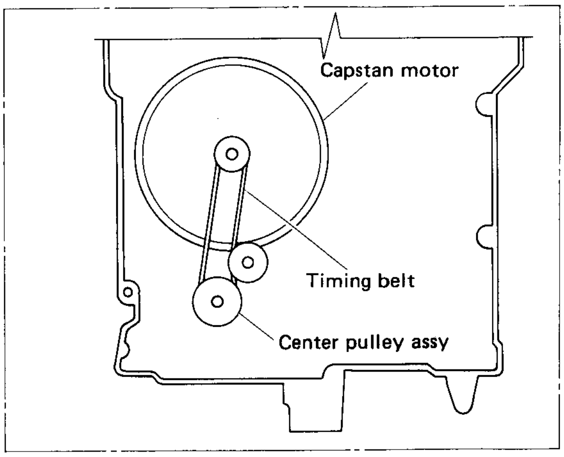

Capstan motor
Timing belt
Center pulley assy

Fig. 1-6-7E

6. Terms to set Eject gear assy (see Fig. 1-6-5B)
1) The cassette housing is re-assembled and it is closed.
2) The Eject lever is pushed in the direction of the drum.

### 1.6.8 Replacement of upper drum

**Note:** Be careful not to touch the head of the upper drum and not to damage and scratch the drum.

1. Remove the washer from the impedance roller assy and take off the impedance roller assy.
2. Unsolder 14 soldered points near the center of the upper drum board (indicated by arrows in the figure).

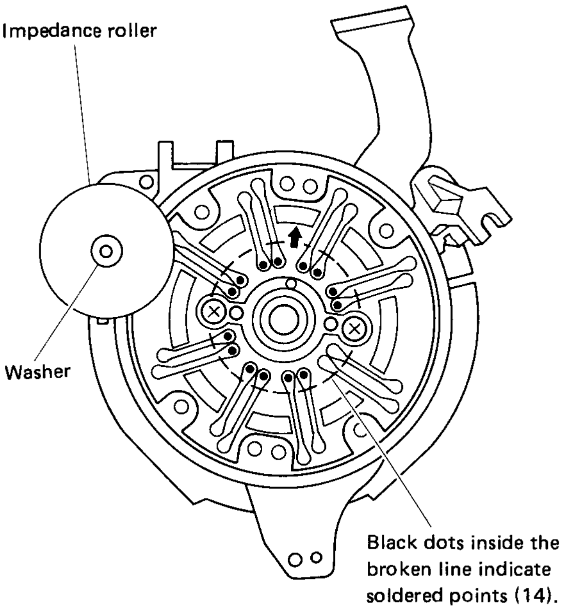

Impedance roller
Washer
Black dots inside the broken line indicate soldered points (14).

**Fig. 1-6-8A** Impedance roller and soldered points

3. Remove two screws Ⓐ and take off the upper drum. If it is hard to take it off, set two screws Ⓐ into the spare hole and tighten them alternately. This makes the removing work easy.

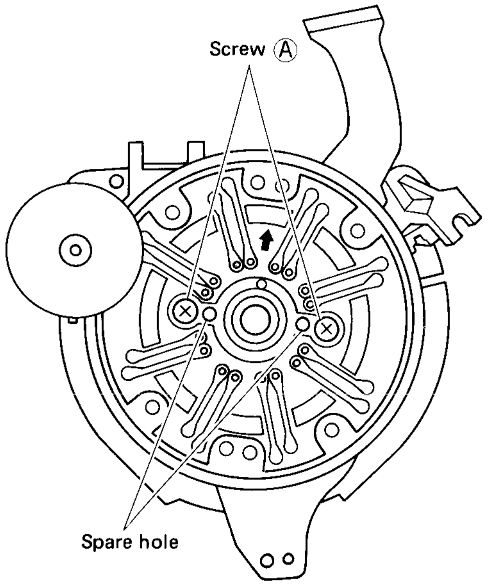

Screw Ⓐ
Spare hole

**Fig. 1-6-8B**

4. Set the upper drum so that the hole Ⓑ and the section Ⓒ of the rotor are positioned at a right angle to each other viewed from the top (from Ⓓ) as shown in Fig. 1-6-8C.
   Before setting the upper drum, perform to clean the contact surfaces of the upper and lower drums with alcohol.

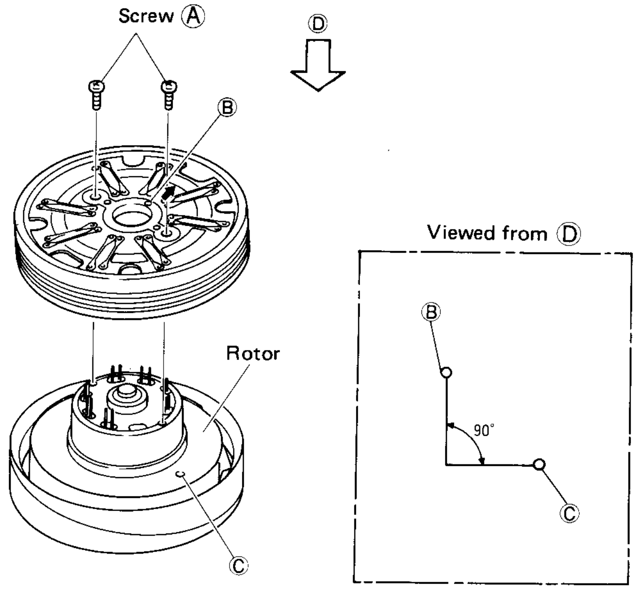

Screw Ⓐ
Ⓓ
Ⓑ
Rotor
Ⓒ
Viewed from Ⓓ
Ⓑ
90°
Ⓒ

**Fig. 1-6-8C**

5. If it is hard to install the upper drum, insert a soldering iron (50 W) into the hole to heat it for 3–5 minutes to expand the upper drum prior to assembling.
   After it is cooled and the hole becomes slightly tight, tighten the screws.

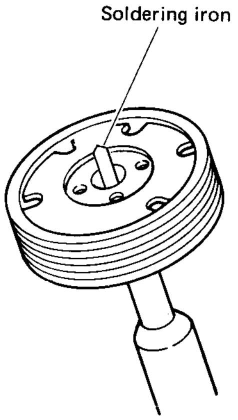

Soldering iron

**Fig. 1-6-8D**

6. Alternately and evenly tighten the two screws Ⓐ (Fig. 1-6-8C), and solder 14 points that were soldered previously.
7. Clean the drum assy, and perform checkup and adjustment of the tape transport system and electrical system.

### 1.6.9 Caution at replacement of PREAMP board

To remove the PREAMP board, perform it with care of the following things.

1. Unsolder 14 soldered points (shown in Fig. 1-6-9) and make sure to remove solder chips completely. If any solder remains on pins, pins come off when detaching.
2. Remove a screw Ⓐ.
3. Then, the PREAMP board can be detached.

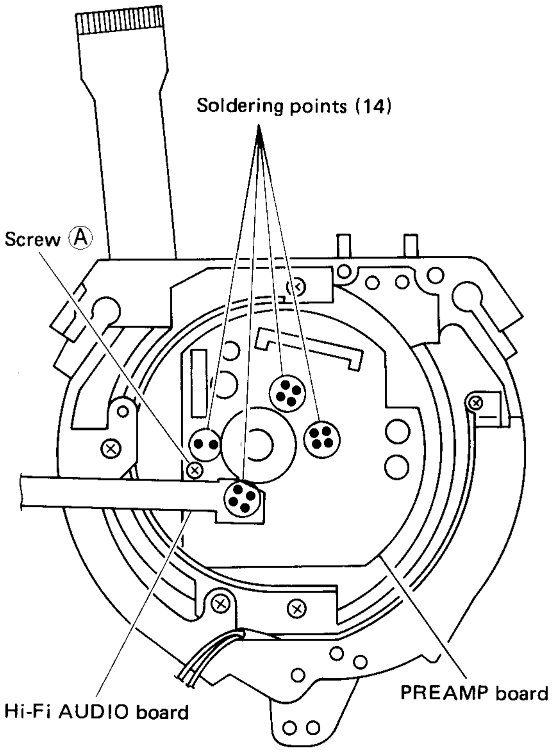


Fig. 1-6-9

## 1.7 MAINTENANCE AND INSPECTION

Since this model is equipped with rotary parts and other parts which may wear as time passes, it is important to clean the tape transport system and rotary parts as well as to apply oil and grease to them in order to make full use of its real capacity for a long time.

Besides basic maintenance work, parts should be checked periodically for wear, and replaced when necessary.

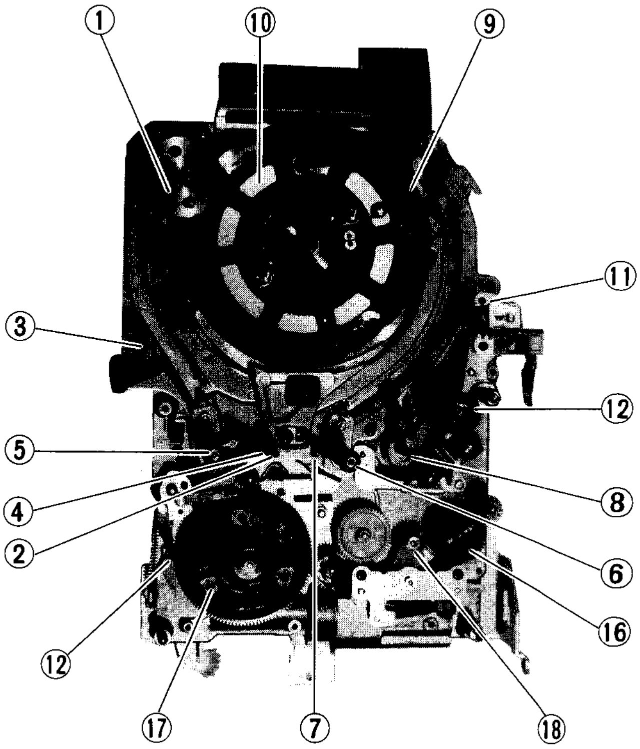


Fig. 1-7-1 Location of main mechanism parts (Top view)

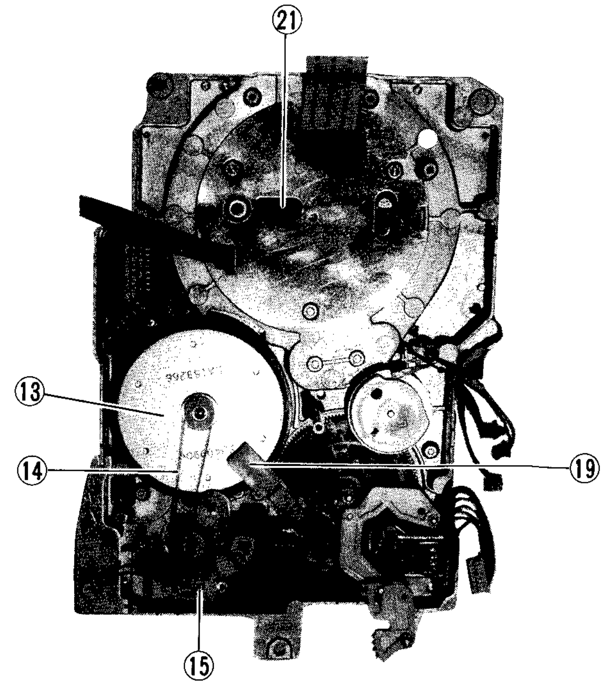


Fig. 1-7-2 Location of main mechanism parts (Bottom view)

### 1.7.1 Standard servicing schedule for main components

The following table indicates the standard servicing period by kind of servicing such as cleaning, oiling, replacing, etc. In practice, the indicated periods will widely vary according to environmental and use conditions, but it is plain that nonfulfillment of the maintenance work not only shortens the specific period of every item sharply but also influences other components badly.

Also be aware that rubber parts may possibly deform and age as time passes even when the set is not used.

| System | Symbol No. | Parts Name | Assy | Periodic servicing schedule (operation hours) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 250 | 500 | 750 | 1000 | 1250 | 1500 | 1750 | 2000 | 3000 |
| Tape trans-port system | 1 | Impedance roller (M4-2D) | A | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ |
| | 2 | SUP slant pole (M3-8A) | A | | | | | | | | | |
| | 3 | SUP guide roller (M3-8B) | | | | | | | | | | |
| | 4 | Tension pole (M3-6B) | A | | | | | | | | | |
| | 5 | SUP guide pole (M3-3) | A | | | | | | | | | |
| | 6 | TU guide roller (M3-10B) | | | | | | | | | | |
| | 7 | TU slant pole (M3-10A) | A | | | | | | | | | |
| | 8 | Capstan (M3-69) | A | | | | | | | | | |
| | 9 | Lower drum (M4-2R) | A | | | | | | | | | |
| | 10 | Upper drum (M4-2A) | | ★ | ★ | ☆ | ● | ★ | ★ | ☆ | ● | ● |
| | 11 | A/C head (M3-12) | A | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ● |
| | 12 | Pinch roller (M3-61B) | | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ● |
| Drive system | 13 | Capstan motor (M3-69) | A | | | | | | | | ● | |
| | 14 | Timing belt (M3-73) | | | | | ○ | | | | ● | ○ |
| | 15 | Loading motor (M3-30A) | | | | | | | | | | ● |
| | 16 | TU clutch (M3-25) | A | △ | △ | △ | ▲ | △ | △ | △ | ▲ | ▲ |
| | 17 | SUP reel disk (M3-48) | | △ | △ | △ | ▲ | △ | △ | △ | ▲ | ▲ |
| | 18 | Center pulley (M3-44) | | | | | ○ | | | | ○ | ○ |
| Others | 19 | Capstan brake (M3-30) | A | | | | ○ | | | | ○ | ● |
| | 20 | Tension band (M3-6C) | A | | | | ○ | | | | ○ | ○ |
| | 21 | Brush (M4-12) | | | | | ○ | | | | ○ | ○ |

**Note:** Symbols in parenthesis after parts name indicate as follows.

Example: M3-8A
└ Ref. No. of parts in illustration
└ Symbol No. of exploded view diagram (Block No.)

★ : Cleaning
☆ : Cleaning (or Replacement if necessary)
△ : Lubrication
A : Will be provided as assembly parts for replacement.
▲ : Lubrication (or Replacement if necessary)
● : Replacement
○ : Inspection, and Replacement if necessary

**Table 1-7-1** Maintenance and inspection schedule

### 1.7.2 Remarks

1. Cleaning

1) For cleaning of the upper drum (particularly video heads) use fine-woven cotton cloth or Kimwipe which alcohol soaks through. Regarding cleaning manner, do not move the cloth but turn the upper drum counterclockwise.
   **Note:** Make sure not to move the cloth in the vertical direction to the video head, since it causes damage of the video heads.
2) For cleaning of parts of the tape transport system except the upper drum, use fine-woven cotton cloth or cotton swab soaked alcohol.
3) Before loading the deck with cassette tape, confirm that the cleaned parts are completely dry.

2. Applying oil and grease

1) Periodic oiling and greasing are not required. Apply oil or grease to new parts only when they are newly installed. If oil or grease on the other party is dirty, wipe if off and apply new oil or grease.
2) For parts and points to apply oil and grease, refer to the exploded view diagram (M3) of the mechanism assembly. Table 1-7-2 specifies oil and grease to be used.
3) When oiling, clean the subject parts first and then apply one or two drop(s) of oil. Too much oiling causes rotary parts to slip because of oil leakage.

| Classification | Name | Part No. | Symbol in drawing |
|---|---|---|---|
| Grease | Moriton Grease No. 1 | MOS2-C | A |
| Grease | Fuloil G-31KAV | Kanto-G-31KAV | B |
| Oil | Cosmo Hydro HV100 | YTU94027 | B |

**Table 1-7-2** Specific oil and grease used in the set

3. Checkup

After replacement of the supply reel disk and tension band, make sure to inspect and adjust back tension according to the adjustment procedure of the deck section.

4. Replacement

Replacement parts which are supplied as assembly parts are indicated by "A" in the "Assy" column of the Table 1-7-1. For their parts numbers, refer to the parts list of the mechanism assembly parts.

# SECTION 2
# DECK SECTION ADJUSTMENT

## 2.1 PREPARATION

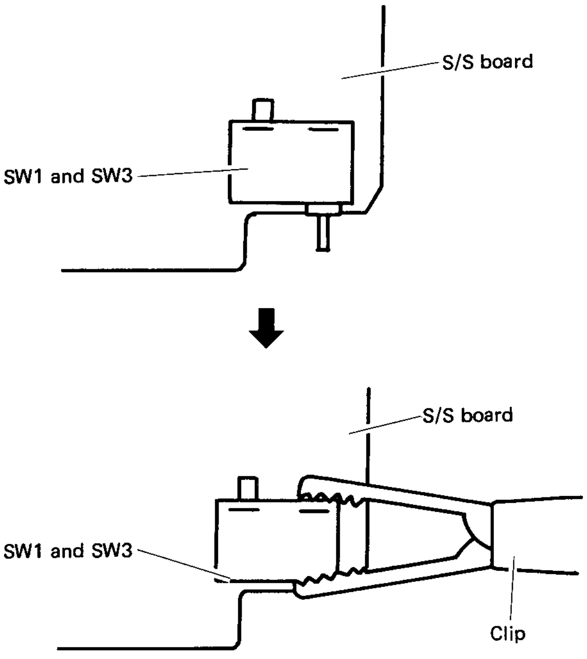
### 2.1.1 Precautions

In most cases the deck section is in need of electrical adjustment, after replacement of worn mechanical parts or video heads.
In the event of malfunction with electrical circuits, troubleshooting with the aid of proper test instruments must be done first, and then commence necessary repair, replacement and adjustment, etc.
When servicing, do it with care of the following things.

1. In case of wiring to chip test points for measurement and observation, use IC clips to avoid any stress.
2. When operating the unit as the S/S board is removed from the mechanism chassis, make sure to do the followings:
   1) Turn on SW1 (CASSETTE SW), SW3 (REC SAFETY SW) and SW4 (HOUSE LEAF SW) of the S/S board. (See Fig. 2-1-1.)
   2) Connect a jump wire between pin 49 (TU REEL ROT IN) of IC1 of the S/S board and TP11 (DRUM FF) of the Y/C board, since TU REEL SENSOR output is not supplied and the deck goes to the Emergency mode.

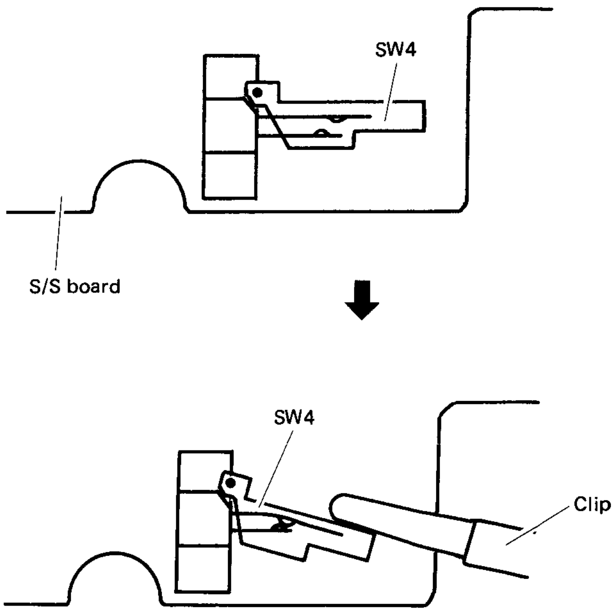
For adjustments of the preamp circuit, the preliminaries of the above item 1) and 2) are not required.

- How to turn SW1 and SW3 on



Catch the switch by a clip to turn it on.

- How to turn SW4 on



Catch the board by a clip to turn it on.

**Fig. 2-1-1** How to turn switches on

### 2.1.2 Hooking up

When adjusting the deck section, connect it as shown in Fig. 2-1-2 by using the Y/C separator and patch cords.

**Note:** When using a patch cord ⑥, the picture may disappear. If so, add a wire between chassis and GND on the Y/C board.

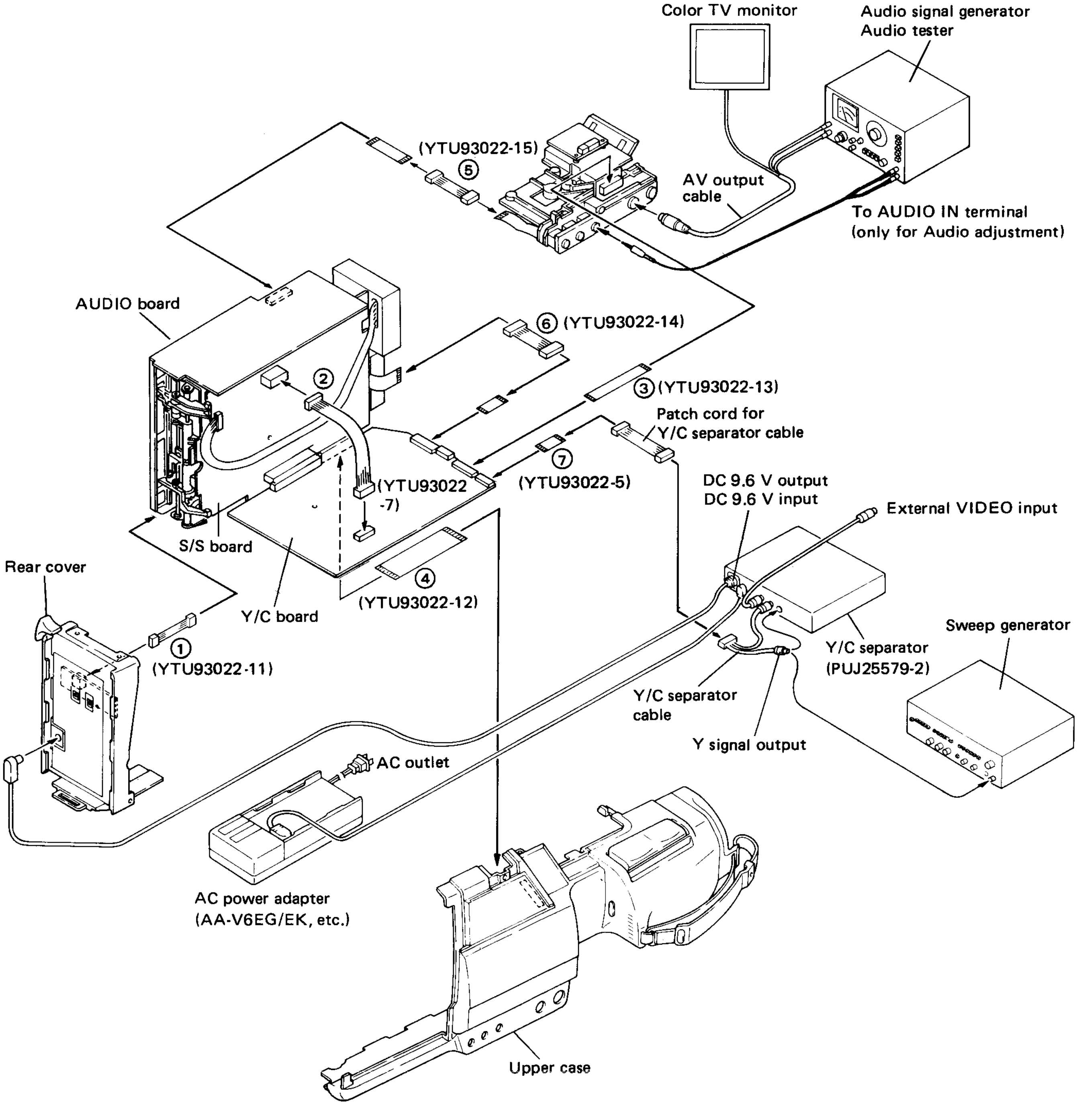

Color TV monitor
Audio signal generator
Audio tester
(YTU93022-15)
⑤
AV output cable
To AUDIO IN terminal
(only for Audio adjustment)
AUDIO board
⑥ (YTU93022-14)
②
③ (YTU93022-13)
Patch cord for Y/C separator cable
⑦
(YTU93022-7)
(YTU93022-5)
DC 9.6 V output
DC 9.6 V input
External VIDEO input
S/S board
Rear cover
④
(YTU93022-12)
Y/C board
①
(YTU93022-11)
Sweep generator
Y/C separator
(PUJ25579-2)
Y/C separator cable
Y signal output
AC outlet
AC power adapter
(AA-V6EG/EK, etc.)
Upper case

Fig. 2-1-2 Standard setup for deck section adjustment

## 2.2 REGULATOR CIRCUIT

| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 1 | REG 8 V | • SP REC | • TP203<br>(REG 8 V)<br>$\boxed{0}\boxed{1}$ S/S | • R210 (REG 8 V)<br>$\boxed{0}\boxed{1}$ S/S | 1) Connect a DC voltmeter between TP203 and GND, and adjust R210 for 8 ± 0.2 V DC. |

## 2.3 SERVO & INTERCHANGEABILITY

**Note:** This adjustment must be performed after replacement of the upper drum assy or the lower drum assy.

| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 1 | Back tension | • Cassette torque meter<br>• SP REC | • Cassette torque meter | • Screw Ⓐ | 1) Set a cassette torque meter onto the deck in the SP REC mode, and confirm that the back tension is within 25 ± 5 g-cm.<br>If necessary, loosen the screw Ⓐ a little bit and adjust the tension band holder position to obtain 25 ± 5 g-cm back tension.<br>2) Set the beginning portion of an EC-30 tape in the SP REC mode. At that time, confirm that the shaft centers of the tension pole and the impedance roller are nearly aligned on a vertical straight line to the front of the deck.<br>**Note:**<br>• Confirm that the tension pole does not contact the chassis at the beginning of the tape, and the impedance roller rotates at the end of the tape.<br>• If either result of the step 1) and 2) is unsatisfactory, replace the tension band.<br>• If there is a large difference in the values measured by the cassette torque meter, replace the supply reel disk.<br>3) Confirm that the cassette torque meter reads 25–35 g-cm as the play torque. If necessary, replace the TU clutch assy. |

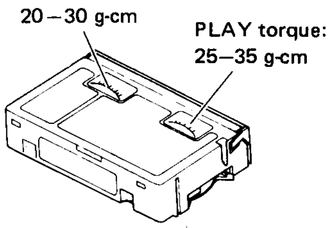


**Fig. 2-3-1** Cassette torque meter

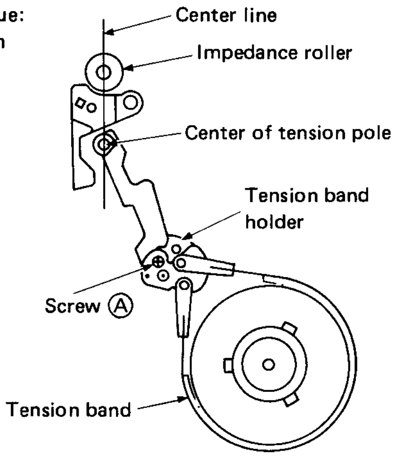
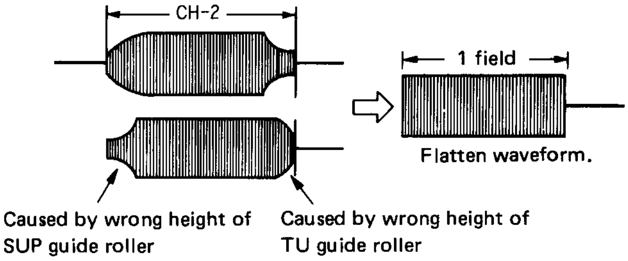
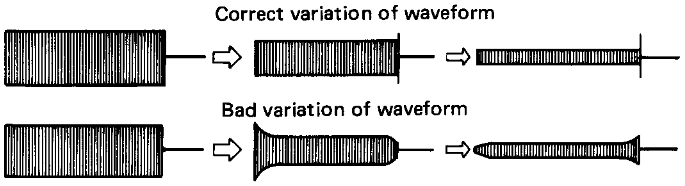
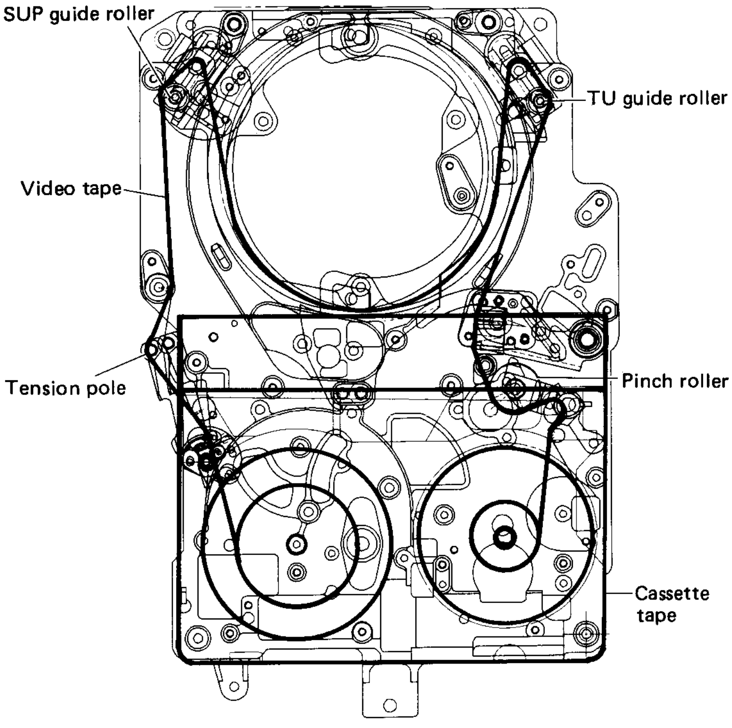
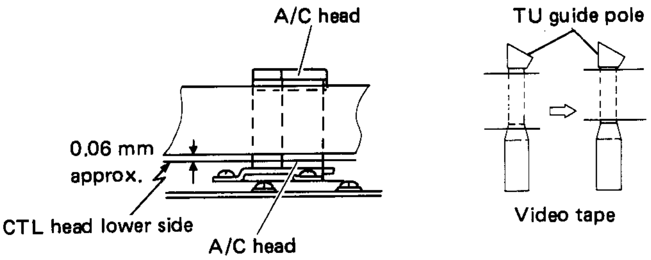
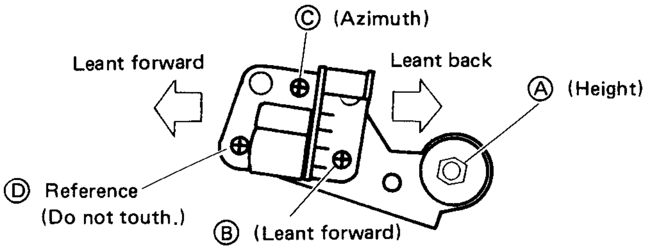
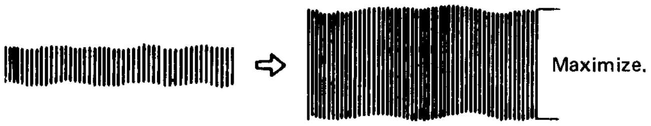
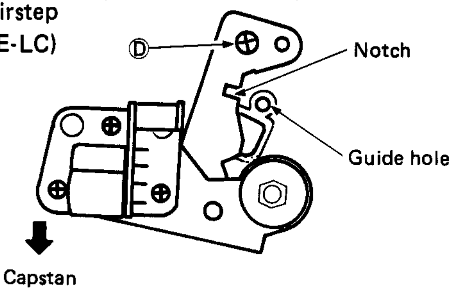
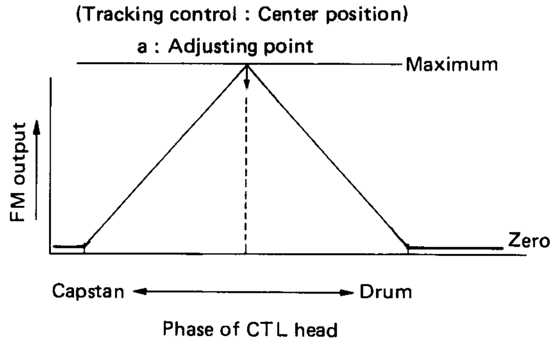
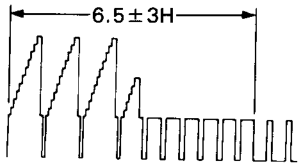


**Fig. 2-3-2** Correlative position of tension pole and impedance roller

| No. | Item | Mode & Signal | Check Point (Waveform & Adjustment) | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| 2 | Tape pattern | • Alignment tape LP stairstep (MHPE-LC) | • CN6 pin 5 (PB FM OUT) [0][2] Y/C<br>• TP11 (DRUM FF) (Ext. trigger) [0][2] Y/C | • SUP/TU guide rollers | 1) Observe waveform at CN6 pin 5 with external trigger (–) from TP11.<br>2) Play the LP stairstep signal of the alignment tape and adjust the tracking control to maximize the FM waveform.<br>3) If the observed FM waveform is not flat, adjust the height of the supply or/and take-up guide rollers with a hex. wrench (1.5 mm) to get a flat waveform.<br>**Note:** Slowly turn the guide roller to prevent the tape from damage.<br>4) While varying the Tracking CTL for maximum to minimum FM level, confirm FM waveform is always flat.<br>If there is falling or raising portions, stop turning the Tracking CTL and perform fine adjustment of supply or take-up guide roller height so that waveform is as flat as possible. Repeat step (4) several times.<br>5) Set for stop mode and then for playback mode again, since the height of guide rollers may move during adjustment.<br>Confirm, when varying the Tracking CTL, FM waveform variation is always flat. |
| | |  CH-2<br>1 field<br>Flatten waveform.<br>Caused by wrong height of SUP guide roller<br>Caused by wrong height of TU guide roller<br>**Fig. 2-3-3** FM waveform<br> Correct variation of waveform<br>Bad variation of waveform<br>**Fig. 2-3-4** FM waveform | | | |
| | | • Alignment tape SP stairstep (MHPE-C or MH-C2)<br>• REC then PB<br>• SP/LP | • CN6 pin 5 (PB FM OUT) [0][2] Y/C | | 6) Play the SP stairstep signal of the alignment tape and repeat the step 4) to confirm that there is nothing abnormal.<br>**Note:** At the adjustment for LP and SP, give priority to the LP pattern adjustment.<br>7) Record the signal and play it back both in the SP and LP modes, and confirm that the FM waveform is flat in the both modes.<br>8) Through the above steps, make sure of no wrinkling/damage in the tape around the impedance roller and take-up guide pole in Loading/Unloading, Search Rewind, and at mode change from Search Rewind to Playback.<br>If tape wrinkling or damage occurs around the take-up guide pole, adjust the angle (slant) of the A/C head to the tape so that the tape normally runs along the lower flange of the guide pole. |
| | |  SUP guide roller<br>TU guide roller<br>Video tape<br>Tension pole<br>Pinch roller<br>Cassette tape<br>**Fig. 2-3-5** Tape transport system | | | |

| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 3 | A/C head height & azimuth | • Alignment tape SP stairstep (MHPE-C or MH-C2)<br>• Audio output selector SW: NORMAL | • TP18 (AUDIO L OUT)<br>$\boxed{0}\boxed{3}$ AUDIO | • A/C head | 1) Play the SP 6 kHz audio signal of the alignment tape and observe waveform at TP18. TP18.<br>**Note:** When the output level is about −6 dBs (1.1 Vp-p, 0.39 Vrms) and level variation is within −2 dB, it is normal and does not need to adjust.<br>2) If ncessary, with reference screw Ⓓ, adjust the screws Ⓑ and Ⓒ to stand the A/C head at the right angle to the chassis.<br>3) Turn the nut Ⓐ to adjust the height of the A/C head as shown in Fig. 2-3-6.<br>4) Confirming no wrinkling in the tape around the take-up guide pole, subtly adjust the screw Ⓑ (bent forward) to maximize the output level but minimize variation in the level.<br>5) Adjust the screw Ⓒ (azimuth) to maximize the output level.<br>6) Repeat the steps 3) to 5) to obtain the maximum output level without fluctuation. |
| | | |   A/C head<br>TU guide pole<br>0.06 mm approx.<br>CTL head lower side<br>A/C head<br>Video tape<br>**Fig. 2-3-6** Tape height<br>  Ⓒ (Azimuth)<br>Leant forward<br>Leant back<br>Ⓐ (Height)<br>Ⓓ Reference (Do not touth.)<br>Ⓑ (Leant forward)<br>**Fig. 2-3-7** A/C head<br> <br>**Fig. 2-3-8** Audio signal | | |

<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Item</th><th rowspan="2">Mode & Signal</th><th>Check Point</th><th>Adjustment Parts</th><th rowspan="2">Procedure</th></tr>
<tr><th colspan="2">Waveform & Adjustment</th></tr>
<tr><td rowspan="2">4</td><td rowspan="2">Phase of CTL head (X value)</td><td>• Alignment tape SP stairstep (MHPE-C or MH-C2)<br>• Tracking control: Center<br>• Alignment tape LP stairstep (MHPE-LC)</td><td>• CN6 pin 5 (PB FM OUT)<br>• TP11 (DRUM FF) (Ext. trigger)<br>[0][2] Y/C</td><td>• A/C head</td><td rowspan="2">1) Play the SP stairstep signal of the alignment tape, and observe waveform at CN6 pin 5 with external trigger (+) from TP11.<br>2) While varying the Tracking CTL, confirm the following matter. When the Tracking CTL is at center position, FM level should be maximum.<br>3) If necessary, slightly loosen the screw Ⓓ of the A/C head, insert the tips of the A/C head positioning tool into the notch and the guide hole, and then move the A/C head fully in the direction of the capstan. Secondly, move the A/C head in the direction of the drum little by little and find a point 'a' where the FM output is maximum for the first time. At this point, tighten the screw Ⓓ.<br>4) Play back the LP stairstep signal of the alignment tape, and confirm that the FM output level is maximum at the center position of the Tracking control. If not, repeat the step 3).</td></tr>
<tr><td colspan="3"> <br>Fig. 2-3-9 Phase of CTL head<br> <br>Fig. 2-3-10 CTL head phase adjusting point</td></tr>
<tr><td rowspan="2">5</td><td rowspan="2">PB switching point</td><td>• Alignment tape SP stairstep (MHPE-C or MH-C2)<br>• Tracking control: Center</td><td>• TP10 (VIDEO OUT)<br>• TP11 (DRUM FF) (Ext. trigger)<br>[0][2] Y/C</td><td>• R7 (PB SW POINT)<br>[0][1] S/S</td><td rowspan="2">1) Observe waveform at TP10 with external trigger from TP11.<br>2) Adjust R7 so that the trigger point is 6.5H before V. sync. signal.</td></tr>
<tr><td colspan="3"> <br>Fig. 2-3-11 PB switching point</td></tr>
<tr><td>6</td><td>V. lock</td><td>• REC then PB<br>• SP</td><td>• TV monitor</td><td>• R1 (V. LOCK)<br>[1][2] REAR</td><td>1) Record in the SP mode and play it in the Still mode.<br>2) Adjust R1 so that the playback picture is stable without vertical jitter in the Still mode.<br>**Note:** Only for this adjustment, use the service hole of the rear cover.</td></tr>
</table>

## 2.4 PREAMP CIRCUIT

| No. | Item | Mode & Signal | Check Point / Adjustment Parts<br>Waveform & Adjustment | Procedure |
|---|---|---|---|---|

**Note:** This adjustment should be performed only when self-recording picture has flicker and B/W reversal after replacing the upper drum or the PRE-AMP board.
It is necessary to correct each head characteristic in order to obtain the optimum picture quality for super VHS.

**1** Video head resonance & Q (quality factor)

- RF sweep

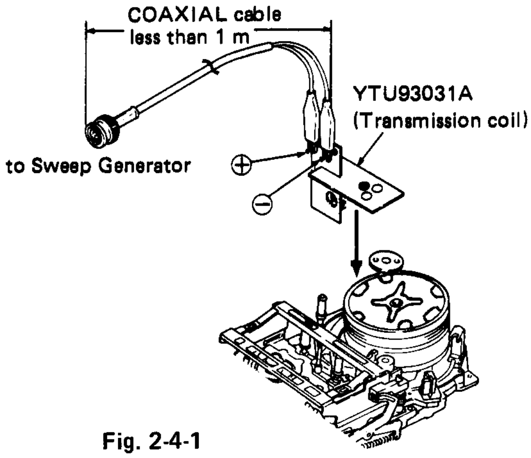


Fig. 2-4-1

**Check Point:**

- CN4 pin 8 (SP PB FM OUT)
- CN4 pin 10 (LP PB FM OUT)

$\boxed{0}\boxed{2}$ Y/C

**Adjustment Parts:**

- C15 (SP CH-1 fo)
- R13 (SP CH-1 Q)

$\boxed{0}\boxed{4}$ PRE AMP

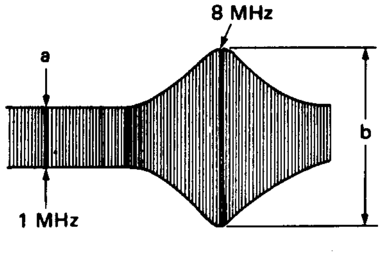


Fig. 2-4-2

**Note:** The following procedure is for SP CH-1 head.
For other heads, refer to Table 2-4-1.

1) Remove the S/S board from the chassis, and then take off the shield case of the PRE-AMP board.
2) For SP CH-1 head adjustment, insert three black stoppers of the tool to the SP CH-1 hole of the DRUM board to install the transmission tool to the upper drum certainly.
3) Supply the sweep signal from 100 kHz to 9 MHz with 1 MHz and 8 MHz markers as shown in Fig. 2-4-1.
4) Shortcircuit CN4 pins 4, 9 and 11 of the Y/C board to GND to switch the pre-amp circuit to SP CH-1 PB mode.
5) Connect the oscilloscope to CN4 pin 8 of the Y/C board to observe the waveform with external trigger (−) from TP11.
   **Note:** If the output waveform is distorted, adjust the output level of the sweep signal generator.
6) Adjust C15 to set the resonance point to 8.0 MHz.
7) Adjust R13 so that 8 MHz signal level (b) is double 1 MHz (a) as shown in Fig. 2-4-2.

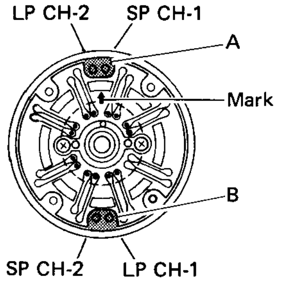


Fig. 2-4-3 Head position

8) Repeat steps 2) through 7) for the other heads according to Table 2-4-1.

**Note:** If Q ratio cannot be obtained, adjust both SP (or LP) head Q ratio to that of the lesser efficient channel.

| Head | Tool Position | Check Point (Y/C) | Adjustment Parts | | Pre-amp Selection (Y/C CN4) | | |
|---|---|---|---|---|---|---|---|
| | | | Resonance (PREAMP) | Q (PREAMP) | Pin 9 ($\overline{\text{PB}}$) | Pin 4 (D. FF) | Pin 11 ($\overline{\text{SP}}$) |
| SP CH-1 | A | CN4 pin 8 | C15 | R13 | L | L | L |
| SP CH-2 | B | CN4 pin 8 | C16 | R4 | L | H | L |
| LP CH-1 | B | CN4 pin 10 | C18 | R6 | L | H | H |
| LP CH-2 | A | CN4 pin 10 | C20 | R10 | L | L | H |

Note: L : GND H : 5 V (S/S board TP204)

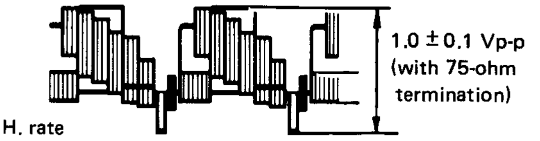
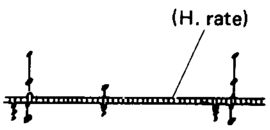
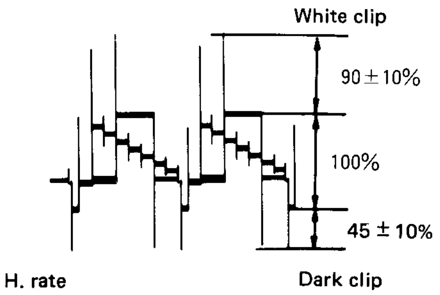
Table 2-4-1

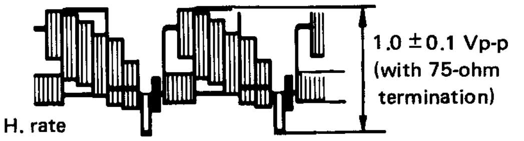
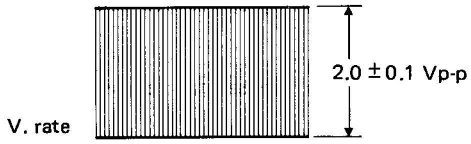
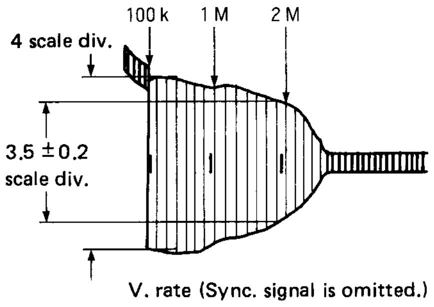
### 2.5 Y (LUMINANCE) CIRCUIT

**Note:** For the following adjustments, supply signals of the Y/C separator to the camera signal input terminal of the Y/C board as shown in Fig. 2-1-2.

### 2.5.1 C (conventional) VHS Y signal circuit

**Note:** 1) The following are the adjustment steps for conventional VHS Y circuit in the order of adjustment. Keep in mind that if the previous adjustment is incorrect, the following adjustment will not be adjusted correctly.
2) Unless otherwise specified, playback and recording modes are conventional VHS mode, and all test points and adjustment parts are located on the [0] [2] Y/C board.

| No. | Item | Mode & Signal | Check Point<br>Waveform & Adjustment | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| 1 | PB Y level | ● This circuit uses fixed resistors. If IC16 is replaced, these may require replacement with variable resistors to allow adjustment.<br>• Alignment tape C. SP color bar (MHVE-2C or MH-C2) | • TP10 (VIDEO OUT)<br><br> <br>Fig. 2-5-1 C. PB Y level | • R200 (C. PB Y LEVEL) | 1) Play the C. SP color bar signal of the alignment tape and confirm Y level of 1.0 ± 0.05 Vp-p at TP10.<br>2) If necessary, replace R200 with the variable resistor NVP1301-103N and adjust it for 1.0 Vp-p. |
| 2 | Y NR input level | ● This circuit uses fixed resistors. If IC3 is replaced, these may require replacement with variable resistors to allow adjustment.<br>• Alignment tape C. SP color bar (MHVE-2C or MH-C2) | • TP29 (Y NR SUBTRACT OUT)<br><br> <br>Fig. 2-5-2 Y NR input level difference | • R104 (CCD BIAS) | 1) Confirm that the average level is almost minimum at TP29.<br>2) If necessary, replace R104 with the variable resistor NVP1301-332N, and adjust it for minimum average level. |
| 3 | White & Dark clip | ● This circuit uses fixed resistors. If IC16 is replaced, these may require replacement with variable resistors to allow adjustment.<br>• REC<br>• Color bar | • TP3 (MAIN EMPHA. OUT)<br><br> White clip<br>90 ± 10%<br>100%<br>45 ± 10%<br>H. rate<br>Dark clip<br>Fig. 2-5-3 C. white & dark clip | • R245 (C. WHITE CLIP)<br>• R247 (C. DARK CLIP) | 1) Confirm that white clip is 90 ± 10% at TP3.<br>2) If necessary, replace R245 with the variable resistor NVP1301-103N and adjust it for 90% white clip.<br>3) Confirm that dark clip is 45 ± 10% at TP3.<br>4) If necessary, replace R247 with the variable resistor NVP1301-472N and adjust it for 45% dark clip. |

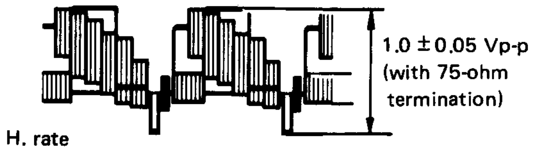
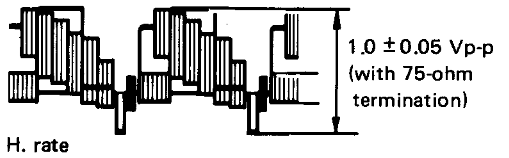
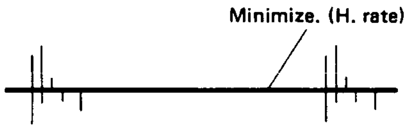
| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 4 | Carrier deviation | ● This circuit uses fixed resistors. If IC16 is replaced, these may require replacement with variable resistors to allow adjustment. | | | **Note:** This adjustment should be performed only when E-E and playback of the pre-recorded tape are normal, while the sync at self-recording is distorted (poor carrier set) or S/N is extremely poor (poor deviation). |
| | | • REC<br>• No signal | • TP22(REC FM MOD OUT) | • R222 (C. CARRIER) | 1) Connect a frequency counter to TP22, and confirm that frequency is 3.8 MHz ± 50 kHz without input signal.<br>2) If necessary, replace R222 with the variable resistor NVP1301-223N and adjust it for the specified value. |
| | | • REC then PB<br>• Color bar | • TP10 (VIDEO OUT) | • R224 (C. DEVIATION) | 3) Record the color bar signal and play it to confirm that Y level is 1.0 ± 0.1 Vp-p at TP10 in playback.<br>4) If necessary, replace R224 with the variable resistor NVP1301-103N and adjust it in recording, and then confirm the result in playback. |
| | | |  **Fig. 2-5-4** PB Y level of C. recorded signal | | |
| 5 | REC FM level | • REC<br>• LP<br>• Color bar | • TP104 (LP REC FM OUT)<br>• TP11 (DRUM FF) (Ext. trigger) | • R168 (C. REC FM LEVEL) | 1) In LP REC mode, observe waveform at TP104 with external trigger from TP11.<br>2) Adjust R168 for 2.0 Vp-p FM level. |
| | | • SP | • TP4 (SP REC FM OUT) | | 3) In SP REC mode, confirm that FM level is 2.4 ± 0.2 Vp-p at TP4.<br>**Note:** If REC FM level is low, S/N ratio is deteriorated in playback, while Hi-Fi audio becomes noisy if it is high. |
| | | |  **Fig. 2-5-5** C. LP REC FM level | | |
| 6 | PB frequency response | • REC then PB<br>• SP<br>• Color sweep | • TP110 (Y OUT) | • R278 (C. SP PB RF EQ) | **Note:** This adjustment should be performed only when a playback picture at self-recording is not sharp (low by 2 MHz component) or there is B/W reversal (high by 2 MHz component) in it after the upper drum was replaced.<br>1) Record the color sweep signal and play it to observe waveform at TP110.<br>2) If the sweeper's 100 kHz marker frequency is for 4 scale divisions on the oscilloscope screen, adjust R278 so that 2 MHz marker level becomes 3.5 scale divisions.<br>**Note:** After re-assembling the deck and camera sections together with, record a high contrast object in the SP and LP modes. While observing the playback picture, confirm that there is no B/W reversal and picture is sharp. |
| | | |  **Fig. 2-5-6** C. PB frequency response | | |

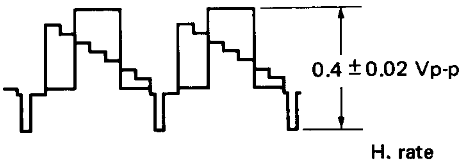
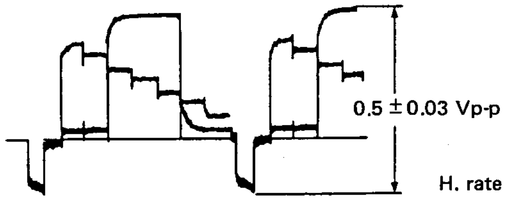
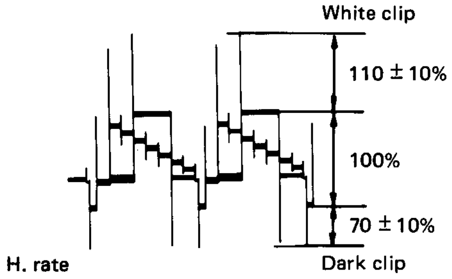
### 2.5.2 S-VHS Y signal circuit

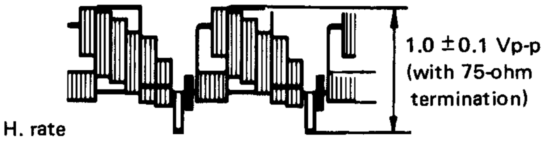
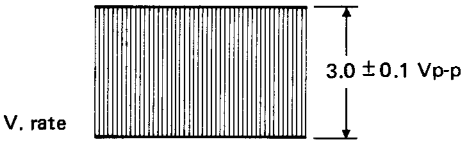
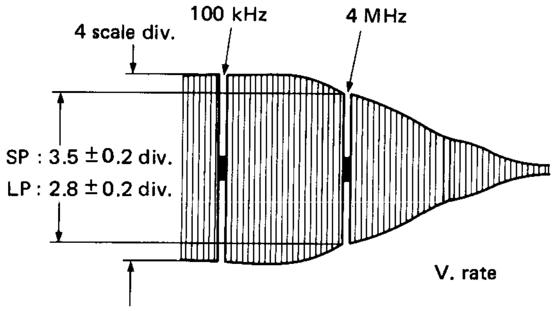
**Note:** 1) Before proceeding to do the following items, make sure to confirm that the C (conventional) VHS Y signal circuit has been correctly adjusted. (Refer to Section 2.5.1.)

2) The following are the adjustment steps for S-VHS circuit in the order of adjustment. Keep in mind that if the previous adjustment is incorrect, the following adjustment will not be adjusted correctly.

3) Unless otherwise specified, playback and recording modes are S-VHS mode, and all test points and adjustment parts are located on the 0 2 Y/C board.

| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 1 | E-E Y level | • This circuit uses fixed resistors. If IC16 is replaced, these may require replacement with variable resistors to allow adjustment. | | | |
| | | • REC<br>• Color bar | • TP10 (VIDEO OUT) | • R237 (E-E Y LEVEL) | 1) Confirm Y level of 1.0 ± 0.05 Vp-p at TP10.<br>2) If necessary, replace R237 with the variable resistor NVP1301-153N and adjust it for 1.0 Vp-p. |
| | | |  Fig. 2-5-7 E-E Y level | | |
| 2 | PB Y level | • This circuit uses fixed resistors. If IC16 is replaced, these may require replacement with variable resistors to allow adjustment. | | | |
| | | • REC then PB<br>• Color bar | • TP10 (VIDEO OUT) | • R201 (S PB Y LEVEL) | 1) Record the color bar signal and play it to confirm that Y level is 1.0 ± 0.05 Vp-p at TP10 in playback.<br>2) If necessary, replace R201 with the variable resistor NVP1301-103N and adjust it so that the Y level is 1.0 Vp-p. |
| | | |  Fig. 2-5-8 S. PB Y level | | |
| 3 | 0.5H delayed video level | • This circuit uses fixed resistors. If IC3 is replaced, these may require replacement with variable resistors to allow adjustment. | | | |
| | | • Alignment tape S LP color bar (MHVE-2HC or MH-C2H)<br>• Search | • TP10 (VIDEO OUT)<br>• TP21 (0.5H DELAYED SIG. OUT) | • R16 (0.5H DELAYED SIG. LEVEL) | 1) Connect one channel of dual trace oscilloscope to TP10 and the other channel to TP21. Change CH-2 to reverse (INV) mode and align both channels' VOLTs/DIV. Switch to the same range and select Vertical mode SW to ADD.<br>2) In Search mode, confirm that TP10 has the same level as that of TP21, namely, level difference is minimum.<br>3) If necessary, replace R16 with the variable resistor NVP1301-332N and adjust it for minimum output. |
| | | |  Fig. 2-5-9 0.5H delayed signal level difference | | |

| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 4 | Non-linear emphasis limiter balance | • This circuit uses fixed resistors. If IC18 is replaced, these may require replacement with variable resistors to allow adjustment. | | | |
| | | • REC<br>• No signal | • TP27 (S NL EMPHA LIM BAL Vcc) | • R298 (S NL EMPHA LIM BAL)<br>• R297 (S NL EMPHA LIM SUB BAL) | 1) Confirm that emphasis limiter voltage is 3.48 ± 0.05 V DC at TP27.<br>2) If necessary, replace R298 with the variable resistor NVP1301-103N and adjust it for 3.48 V DC.<br>**Note:** Do not adjust R297. |
| 5 | Non-linear emphasis input level | • This circuit uses fixed resistors. If IC18 is replaced, these may require replacement with variable resistors to allow adjustment. | | | |
| | | • REC<br>• Color bar | • TP26 (S NL EMPHA IN) | • R313 (S NL EMPHA INPUT LEVEL) | 1) Confirm that input level is 0.4 ± 0.02 Vp-p at TP26.<br>2) If necessary, replace R313 with the variable resistor NVP1301-102N and adjust it for 0.4 Vp-p. |
| | |  **Fig. 2-5-10** S. non-linear emphasis input level | | | |
| 6 | Non-linear emphasis output level | • This circuit uses fixed resistors. If IC18 is replaced, these may require replacement with variable resistors to allow adjustment. | | | |
| | | • REC<br>• Color bar | • TP28 (S NL EMPHA OUT) | • R316 (S NL EMPHA OUTPUT LEVEL) | 1) Confirm that output level is 0.5 ± 0.03 Vp-p at TP28.<br>2) If necessary, replace R316 with the variable resistor NVP1301-103N and adjust it for 0.5 Vp-p. |
| | |  **Fig. 2-5-11** S. non-linear emphasis output level | | | |
| 7 | White & Dark clip | • This circuit uses fixed resistors. If IC16 is replaced, these may require replacement with variable resistors to allow adjustment. | | | |
| | | • REC<br>• LP<br>• Color bar | • TP3 (MAIN EMPHA. OUT) | • R244 (S WHITE CLIP)<br>• R248 (S DARK CLIP) | 1) Confirm that white clip is 110 ± 10% at TP3.<br>2) If necessary, replace R244 with the variable resistor NVP1301-472N and adjust it for 110% white clip.<br>3) Confirm that dark clip is 70 ± 10% at TP3.<br>4) If necessary, replace R248 with the variable resistor NVP1301-103N and adjust it for 70% dark clip. |
| | |   White clip<br>110 ± 10%<br>100%<br>70 ± 10%<br>H. rate<br>Dark clip **Fig. 2-5-12** S. white & dark clip | | | |

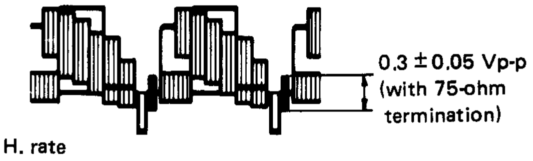
| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 8 | Carrier deviation | • This circuit uses fixed resistors. If IC16 is replaced, these may require replacement with variable resistors to allow adjustment. | | | **Note:** This adjustment should be performed only when E-E and playback of the pre-recorded tape are normal, while the sync at self-recording is distorted (poor carrier set) or S/N is extremely poor (poor deviation). |
| | | • REC<br>• No signal | • TP22 (REC FM MOD OUT) | • R223 (S. CARRIER) | 1) Connect a frequency counter to TP22, and confirm that frequency is 5.4 MHz ± 50 kHz without input signal.<br>2) If necessary, replace R223 with the variable resistor NVP1301-223N and adjust it for the specified value. |
| | | • REC then PB<br>• Color bar | • TP10 (VIDEO OUT) | • R225 (S.DEVIATION) | 3) Record the color bar signal and play it to confirm that Y level is 1.0 Vp-p at TP10 in playback.<br>4) If necessary, replace R225 with the variable resistor NVP1301-103N and adjust it in recording, and then confirm the result in playback. |
| | | |  **Fig. 2-5-13** PB Y level of S. recorded signal | | |
| 9 | REC FM level | • REC<br>• LP<br>• Color bar | • TP104 (LP REC FM OUT)<br>• TP11 (DRUM FF) (Ext. trigger) | • R179 (S REC FM LEVEL) | 1) In LP REC mode, observe waveform at TP104 with external trigger from TP11.<br>2) Adjust R179 for 3.0 Vp-p FM level. |
| | | • SP | • TP4 (SP REC FM OUT) | | 3) In SP REC mode, confirm the REC FM level at TP4 is 4.2 ± 0.2 Vp-p.<br>**Note:** Low REC FM level deteriorates S/N ratio in PB, while high REC FM level makes Hi-Fi audio signal noisy. |
| | | |  **Fig. 2-5-14** S. LP REC FM level | | |
| 10 | PB frequency response | • REC then PB<br>• SP/LP<br>• Color sweep | • TP110 (Y OUT) | • R262 (S SP PB RF EQ)<br>• R263 (S LP PB RF EQ) | **Note:** This adjustment should be performed only when a playback picture at self-recording is not sharp (low by 4 MHz component) or there is B/W reversal (high by 4 MHz component) in it after the upper drum was replaced.<br>1) Record the color sweep signal and play it to observe waveform at TP110.<br>2) If the sweeper's 100 kHz marker frequency is for 4 scale divisions on the oscilloscope screen, adjust R262 so that 4 MHz marker level becomes 3.5 scale divisions.<br>3) After the above adjustment for SP mode, change the mode to LP and perform the recording and playback of the color sweep signal in the same manner as the step 1) and adjust R263 so that the level of the 4 MHz marker level is 2.8 scale divisions.<br>**Note:** After re-assembling the deck and camera sections together with, record a high contrast object in the SP and LP modes. While observing the playback picture, confirm that there is no B/W reversal and picture is sharp. |
| | | |   100 kHz<br>4 MHz<br>4 scale div.<br>SP : 3.5 ±0.2 div.<br>LP : 2.8 ±0.2 div.<br>V. rate **Fig. 2-5-15** S. PB frequency response | | |

## 2.6 COLOR SIGNAL CIRCUIT

### 2.6.1 C. (conventional) VHS color signal circuit

**Note:** 1) The following are the adjustment steps for conventional VHS color circuit in the order of adjustment. Keep in mind that if the previous adjustment is incorrect, the following adjustment will not be adjusted correctly.

2) Unless otherwise specified, playback and recording modes are conventional VHS mode, and all test points and adjustment parts are located on the [0] [2] Y/C board.

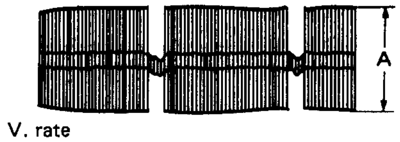
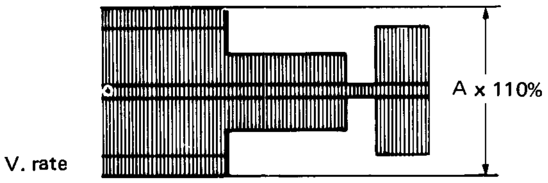
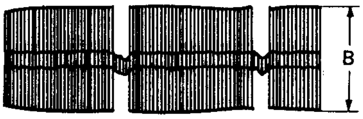
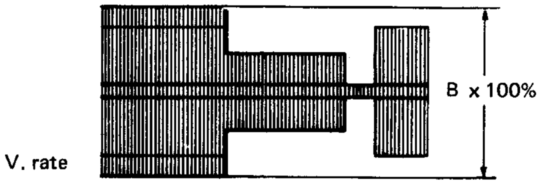
| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 1 | E-E burst level | • REC<br>• SP<br>• Color bar<br><br> <br>Fig. 2-6-1 E-E burst level | • TP10 (VIDEO OUT) | • R317 (E-E BURST LEVEL) | 1) Adjust R317 for 0.3 Vp-p burst level. |

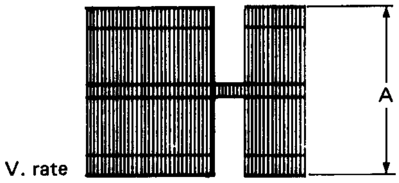
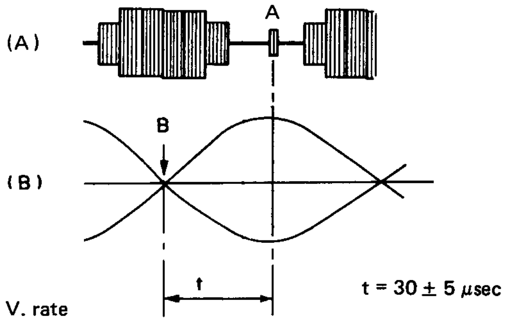
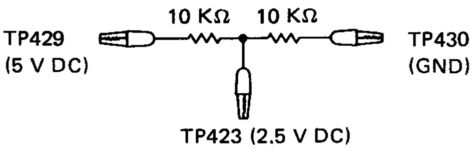
### 2.6.2 S-VHS color signal circuit

**Note:** 1) Before proceeding to do the following checks and adjustment, make sure that the C (conventional) color signal circuit has been correctly adjusted.

2) The following are the adjustment steps for S-VHS C circuit in the order of adjustment. Keep in mind that if the previous adjustment is incorrect, the following adjustment will not be adjusted correctly.

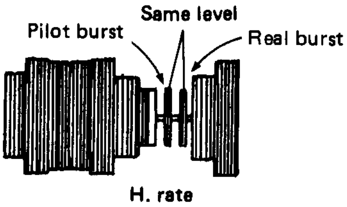
3) Unless otherwise specified, playback and recording modes are S-VHS mode, and all test points and adjustment parts are located on the 0 2 Y/C board.

| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 1 | REC color level | • Alignment tape S LP color bar (MHVE-2HC or MH-C2H)<br>• REC then PB<br>• LP<br>• Color bar | • TP404 (PB COLOR ACC IN)<br>• TP11 (DRUM FF) (Ext. trigger) | • R435 (S LP REC COLOR LEVEL) | 1) Play the S LP color bar signal of the alignment tape, and observe waveform at TP404 with external trigger from TP11.<br>2) Note of the higher channel level for "A".<br>3) Record the color bar signal in LP mode, and play it to observe waveform at TP404.<br>4) Adjust R435 repeatedly in recording so that the higher channel level is "A" x 110% in playback. |
| | | |  Fig. 2-6-2A PB color ACC input level of 'A' tape<br> Fig. 2-6-2B PB color ACC input level of self-recorded signal (S LP) | | |
| | | • Alignment tape S SP color bar (MHVE-2HC or MH-C2H)<br>• REC then PB<br>• SP<br>• Color bar | | • R437 (S SP REC COLOR LEVEL) | 5) In SP mode, perform steps 1) to 3).<br>6) Adjust R437 repeatedly in recording so that the higher channel level is "B" x 100% in playback. |
| | | |  Fig. 2-6-3A PB color ACC input level of 'B' tape<br> Fig. 2-6-3B PB color ACC input level of self-recorded signal (S SP) | | |

<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Item</th><th rowspan="2">Mode & Signal</th><th>Check Point</th><th>Adjustment Parts</th><th rowspan="2">Procedure</th></tr>
<tr><th colspan="2">Waveform & Adjustment</th></tr>
<tr><td>2</td><td>0.5H delayed color level</td><td>• Alignment tape S SP color bar (MHVE-2HC or MH-C2H)</td><td>• TP426 (PB COLOR OUT)<br>• TP427 (LP SEARCH CTL-1)<br>• TP428 (LP SEARCH CTL-2)<br>• TP430 (GND)<br>• TP111 (DRUM FF) (Ext. trigger)</td><td>• R479 (INVERTED COLOR LEVEL)</td><td rowspan="2">1) Play the S SP color bar signal of the alignment tape and observe the waveform at TP426 with external trigger from TP11.<br>2) Make a note of color level "A" in the normal playback mode.<br>3) Short TP427 and TP428 to TP430 in order to switch the circuit to the Search mode. Adjust R479 to equal the color level to "A".</td></tr>
<tr><td></td><td></td><td colspan="3"> <br>Fig. 2-6-4 0.5H delayed color level</td></tr>
<tr><td>3</td><td>APC error phase</td><td>• Alignment tape S SP color bar (MHVE-2HC or MH-C2H)</td><td>• TP426 (PB COLOR OUT)<br>• TP425 (7.8 K TUNING OUT)<br>• TP10 (VIDEO OUT) (Ext. trigger)<br>0 2 Y/C</td><td>• T401 (7.8 K TUNING LEVEL)</td><td rowspan="2">1) Connect the dual trace oscilloscope to TP426 and TP425 with external trigger from TP10 on the Y/C board.<br>2) Adjust T401 so that period between the burst center "A" and 7.8 kHz corrpoint "B" becomes 30 μsec.</td></tr>
<tr><td></td><td></td><td colspan="3"> <br>Fig. 2-6-5</td></tr>
<tr><td>4</td><td>0.5H jump det.</td><td colspan="4">• This circuit uses fixed resistors. If IC404 is replaced, these may require replacement with variable resistors to allow adjustment.</td></tr>
<tr><td></td><td></td><td>• PB<br>• No signal</td><td>• TP424 (2Fh VCO OUT)<br>• TP423 (Fh PHASE COMP OUT)<br>• TP429 (PB 5 V)<br>• TP430 (GND)</td><td>• R460 (2Fh VCO)</td><td rowspan="2">1) Connect the test instrument shown in Fig. 2-6-6 to TP429, TP430 and TP423.<br>2) Play the pre-recorded tape without signal.<br>3) Connect the frequency counter to TP424.<br>4) Confirm that frequency is 30 ± 0.5 kHz.<br>5) If necessary, replace R460 with the variable resistor NVP1301-472N and adjust it for 30 kHz.</td></tr>
<tr><td></td><td></td><td colspan="3">

10 KΩ<br>10 KΩ<br>TP429<br>(5 V DC)<br>TP430<br>(GND)<br>TP423 (2.5 V DC)

<br>Fig. 2-6-6</td></tr>
</table>

| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 5 | Pilot burst level | ● This circuit uses fixed resistors. If IC403 is replaced, these may require replacement with variable resistors to allow adjustment. | | | |
| | | •REC<br>•Color bar | •TP422 (PILOT BURST MIX OUT)<br> <br>Fig. 2-6-7 Pilot burst level | •R439 (PILOT BURST LEVEL) | 1) Connect the oscilloscope to TP422.<br>2) Confirm that video burst level becomes the same pilot burst level.<br>3) If necessary, replace R439 with the variable resistor NVP1301-472N and adjust it for the same level. |

## 2.7 AUDIO CIRCUIT

**Note:** For the following steps, use an Audio input cable to supply audios (for both channels) through the AUDIO IN terminal.

### 2.7.1 Normal audio circuit

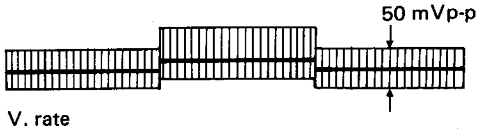
**Note:** Unless otherwise specified, playback and recording modes are Conventional VHS mode, and all test points and adjustment parts are located on the 0 3 AUDIO board.

| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 1 | Bias level | •REC<br>•SP<br>•No input signal | •TP11 (REC BIAS)<br>•TP12 (REC BIAS GND) | •R9 (BIAS LEVEL) | 1) Connect an audio tester between TP11 and TP12.<br>2) Adjust R9 so that bias level is –52 dBs (6.2 mVp-p, 2.2 mVrms) in SP REC mode. |
| 2 | PB audio level | •REC then PB<br>•SP<br>•Audio output selector SW: NORMAL | •TP18 (AUDIO L OUT) or Audio output connector | •R28 (N PB LEVEL) | 1) Supply a sine wave of 1 kHz, –8 dBs (0.5 V p-p, 0.32 Vrms) to the AUDIO IN terminal.<br>2) Connect an audio tester to the AUDIO OUT terminal, and adjust R28 in recording so that playback level becomes –6 dBs (1.1 Vp-p, 0.39 Vrms) in playback. |

### 2.7.2 Hi-Fi audio circuit

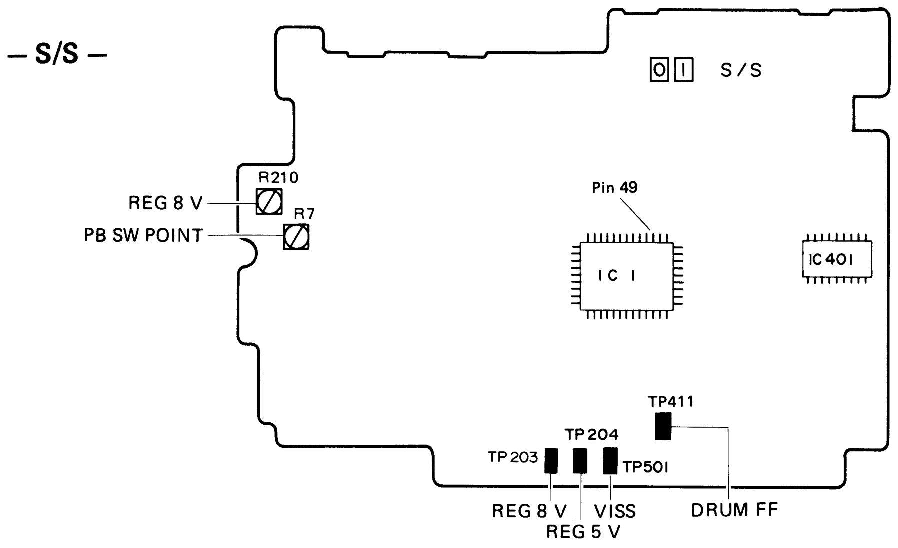
**Note:** Unless otherwise specified, playback and recording modes are Conventional VHS mode, and all test points and adjustment parts are located on the $\boxed{0}\boxed{3}$ AUDIO board.

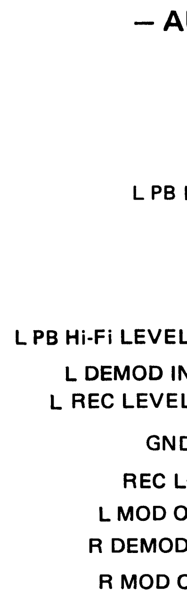
| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 1 | Hi-Fi audio E-E level | • This circuit uses fixed resistors. If IC101 is replaced, these may require replacement with variable resistors to allow adjustment. | | | |
| | | • Hi-Fi Auto REC SW: AUTO<br>• Audio output selector SW: Hi-Fi | • TP18 (AUDIO L OUT) or Audio output connector<br>• TP19 (AUDIO R OUT) or Audio output connector | • R112 (L E-E LEVEL)<br>• R115 (R E-E LEVEL) | 1) Supply a sine wave of 1 kHz, –8 dBs (0.9 V p-p, 0.32 Vrms) to the AUDIO IN terminal.<br>2) Confirm that output level is –6 dBs (1.1 V p-p, 0.39 Vrms) ± 1 dBs at the respective AUDIO OUT terminals.<br>3) If necessary, replace R112 and R115 with the variable resistor NVP1301-332N respectively, and adjust them for –6 dBs. |
| 2 | Hi-Fi PB level | • This circuit uses fixed resistors. If IC102 is replaced, these may require replacement with variable resistors to allow adjustment. | | | |
| | | • Alignment tape SP Hi-Fi audio (MHAFE-1C)<br>• Audio output selector SW: Hi-Fi | • TP18 (AUDIO L OUT) or Audio output connector<br>• TP19 (AUDIO R OUT) or Audio output connector | • R142 (L PB Hi-Fi LEVEL)<br>• R143 (L PB Hi-Fi LEVEL)<br>• R148 (R PB Hi-Fi LEVEL)<br>• R149 (R PB Hi-Fi LEVEL) | 1) Play back the SP Hi-Fi audio segment of the alignment tape.<br>2) Confirm that output level of CH-L is –6 dBs (1.1 Vp-p, 0.39 Vrms) ± 1 dBs.<br>3) If necessary, replace R142 and R143 with the variable resistor NVP1301-684N respectively, and adjust them for –6 dBs.<br>4) Confirm that output level of CH-R is –6 dBs (1.1 Vp-p, 0.39 Vrms) ± 1 dBs.<br>5) If necessary, replace R148 and R149 with the variable resistor NVP1301-684N respectively, and adjust them for –6 dBs. |
| 3 | FM carrier | • This circuit uses fixed resistors. If IC103 is replaced, these may require replacement with variable resistors to allow adjustment. | | | |
| | | • REC<br>• No audio input signal | • TP3 (L MOD OUT) | • R144 (L FINE CARRIER) (Fine adj.)<br>• R145 (L CARRIER) (Rough adj.) | 1) Connect a frequency counter to TP3, and confirm that the frequency is 1.4 MHz ± 5 kHz.<br>2) If necessary, replace R144 and R145 with the variable resistors NVP1301-471N and NVP1301-392N respectively, and adjust them for 1.4 MHz. |
| | | | • TP15 (R MOD OUT) | • R146 (R FINE CARRIER) (Fine adj.)<br>• R147 (R CARRIER) (Rough adj.) | 3) Connect a frequency counter to TP15, and confirm that the frequency is 1.8 MHz ± 5 kHz.<br>4) If necessary, replace R146 and R147 with the variable resistors NVP1301-391N and NVP1301-332N respectively, and adjust them for 1.8 MHz. |

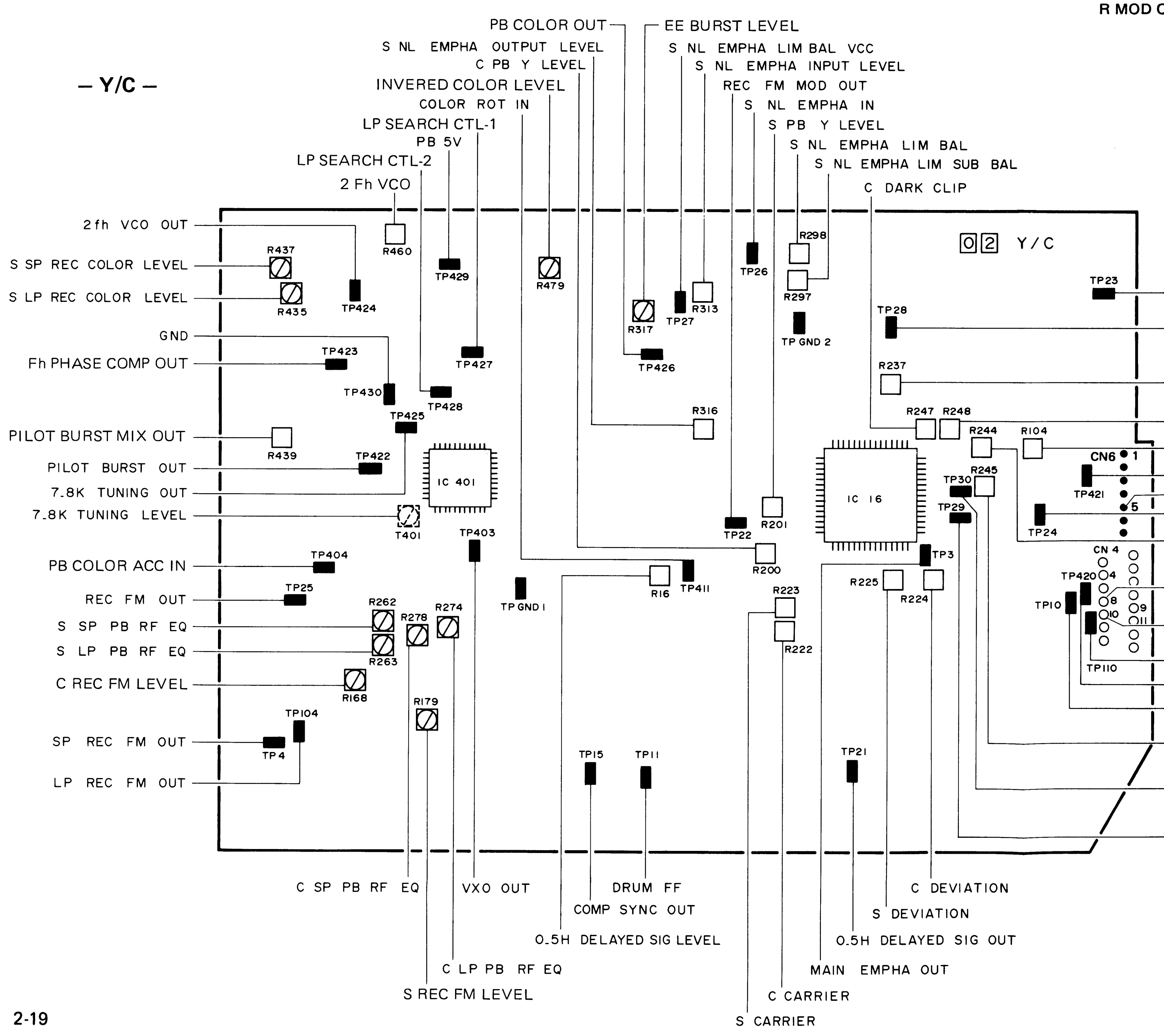
| No. | Item | Model & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 4 | REC FM level | • REC then PB<br>• LP | • TP16 (PB FM OUT)<br>• TP11 (DRUM FF)<br>$\boxed{0}\boxed{2}$ Y/C | • R69 (C REC FM LEVEL) | 1) Only supply video signal.<br>2) Trigger TP11 externally.<br>3) Perform recording with a normal tape and play it back. Confirm that the lower level of two channels is $50^{+0}_{-6}$ mVp-p in playback.<br>4) If necessary, adjust R69 in recording and repeat the step 2). |
| | | • S-VHS SW: OFF | | • R160 (S REC FM LEVEL) | 5) Turn off the S-VHS switch on the rear cover.<br>6) Use an S-VHS tape for recording, and playing it back, confirm that the lower level of two channels is $50^{+0}_{-6}$ mVp-p in playback.<br>7) If necessary, adjust R160 in recording, and repeat the step 5). |
| | | |  <br>Fig. 2-7-1 PB FM level | | **Note:** Perform recording without audio input signal. Play it, and confirm that there is no buzz/hum when the monitor's volume is turned up.<br>If ncessary, check REC color level in respective modes. |
| 5 | REC level (deviation) | • This circuit uses fixed resistors. If IC102 is replaced, these may require replacement with variable resistors to allow adjustment. | | | |
| | | • REC then PB<br>• SP<br>• Hi-Fi auto REC SW: AUTO<br>• Audio output selector SW: Hi-Fi | • TP18 (AUDIO L OUT) or Audio output connector<br>• TP19 (AUDIO R OUT) or Audio output connector | • R136 (L REC LEVEL)<br>• R141 (R REC LEVEL) | 1) Supply a sine wave of 1 kHz, –8 dBs (0.9 V p-p, 0.32 Vrms) to the AUDIO IN terminal.<br>2) Record the signal and play it to confirm that the PB output level of both channels R and L are –6 dBs (1.1 Vp-p, 0.39 Vrms) ± 1 dBs, respectively.<br>3) If necessary, replace R136 and R141 with the variable resistor NVP1301-153N respectively, and adjust them for –6 dBs respectively. |

| No. | Item | Model & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 6 | Limiter | • This circuit uses fixed resistors. If IC102 is replaced, these may require replacement with variable resistors to allow adjustment. | | | |
| | | • SP<br>• REC then PB<br>• Hi-Fi AUTO REC SW: MANUAL & set to full clockwise position | • TP18 (AUDIO L OUT) or Audio output connector<br>• TP19 (AUDIO R OUT) or Audio output connector | • R130 (LIM LEVEL) | 1) Record an input of +17 dBs (15.8 Vp-p, 5.6 Vrms) as the Hi-Fi AUTO REC switch is set to MANUAL and turned fully clockwise, and play it.<br>2) Confirm that PB output waveform is clipped and shapes nearly square waveform.<br>3) If necessary, replace R130 with the variable resistor NVP1301-684N, and perform the following steps.<br>4) Supply a sine waveform of 1 kHz to TP13 and TP14 through an attenuator of −30 dB, and confirm that the level of audio output on both R- and L-ch is −6 dBs (1.1 Vp-p, 0.39 Vrms), respectively.<br>5) Raise the level of the above signal input to TP13 and TP14 by +30 dB by operating the attenuator.<br>6) Repeat recording and playback of the above signal, and confirm that PB output level of the audio signal is limited at the level of +14 dBs (11.3 Vp-p, 4 Vrms). |
| 7 | Level indicator | • Rehearsal<br>• Hi-Fi AUTO REC SW: OFF<br>• Audio output select SW: Hi-Fi | • LCD indicator | • R40 (L IND LEVEL)<br>• R41 (R IND LEVEL) | 1) Turn off the Hi-Fi AUTO REC switch.<br>2) Supply a sine wave of 1 kHz, −8 dBs (0.9 V p-p, 0.32 Vrms) to the AUDIO IN terminal.<br>3) Adjust the Hi-Fi REC level control for −6 dBs (1.1 Vp-p, 0.39 Vrms) output level (at 5th graduation).<br>4) Adjust R40 and R41 alternately so that the indicator indicates 0 dB by lighting it up for both channels. |

## • LOCATION OF TEST POINTS AND VRs ON THE DECK SECTION's BOARDS


– S/S –
01 S/S
R210
R7
REG 8 V
PB SW POINT
Pin 49
IC 1
IC401
TP411
TP204
TP203
TP501
REG 8 V
REG 5 V
VISS
DRUM FF


– A
L PB I
L PB Hi-Fi LEVEL
L DEMOD IN
L REC LEVEL
GND
REC L
L MOD O
R DEMOD
R MOD C


– Y/C –
PB COLOR OUT
S NL EMPHA OUTPUT LEVEL
C PB Y LEVEL
INVERED COLOR LEVEL
COLOR ROT IN
LP SEARCH CTL-1
PB 5V
LP SEARCH CTL-2
2 Fh VCO
EE BURST LEVEL
S NL EMPHA LIM BAL VCC
S NL EMPHA INPUT LEVEL
REC FM MOD OUT
S NL EMPHA IN
S PB Y LEVEL
S NL EMPHA LIM BAL
S NL EMPHA LIM SUB BAL
C DARK CLIP
02 Y/C
2fh VCO OUT
S SP REC COLOR LEVEL
S LP REC COLOR LEVEL
GND
Fh PHASE COMP OUT
PILOT BURST MIX OUT
PILOT BURST OUT
7.8K TUNING OUT
7.8K TUNING LEVEL
PB COLOR ACC IN
REC FM OUT
S SP PB RF EQ
S LP PB RF EQ
C REC FM LEVEL
SP REC FM OUT
LP REC FM OUT
R460
R437
R435
TP424
TP429
R479
TP423
TP427
TP430
TP428
TP425
R439
TP422
IC 401
T401
TP403
TP404
TP25
R262
R263
R278
R274
R168
R179
TP104
TP4
TP GND 1
R317
TP27
R313
TP426
TP26
R298
R297
TP GND 2
R316
TP22
R201
R200
R16
TP411
R223
R222
TP15
TP11
TP21
TP23
TP28
R237
R247
R248
R244
R104
R245
TP30
TP29
IC 16
CN6
1
5
TP421
TP24
CN 4
TP420
4
8
9
10
11
TP10
TP110
TP3
R225
R224
C SP PB RF EQ
VXO OUT
DRUM FF
COMP SYNC OUT
0.5H DELAYED SIG LEVEL
C LP PB RF EQ
S REC FM LEVEL
C DEVIATION
S DEVIATION
0.5H DELAYED SIG OUT
MAIN EMPHA OUT
C CARRIER
S CARRIER

with variable

dBs (15.8 Vp-p,
TO REC switch is
d fully clockwise,

veform is clipped
veform.
with the variable
nd perform the

f 1 kHz to TP13
uator of –30 dB,
of audio output
6 dBs (1.1 Vp-p,

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by operating the

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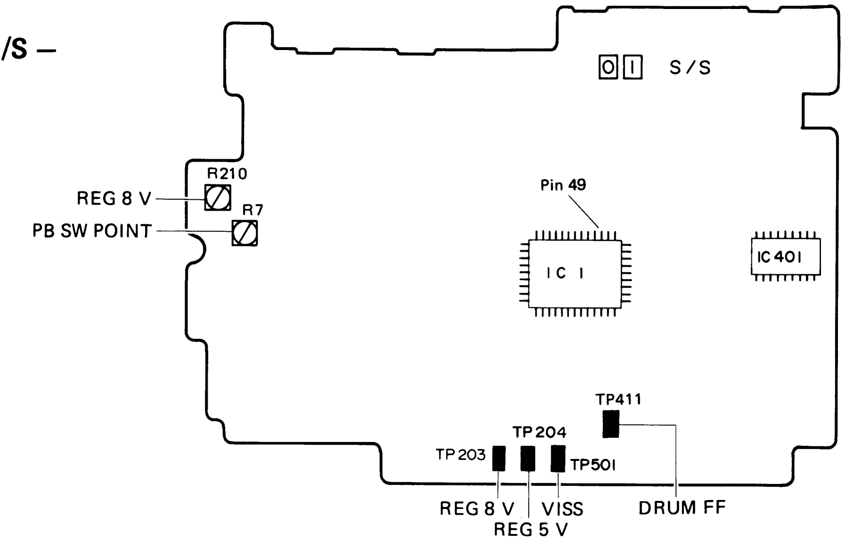
3 output level of
at the level of
).

EC switch.
z, –8 dBs (0.9 V
IO IN terminal.
evel control for
ms) output level

ately so that the
lighting it up for

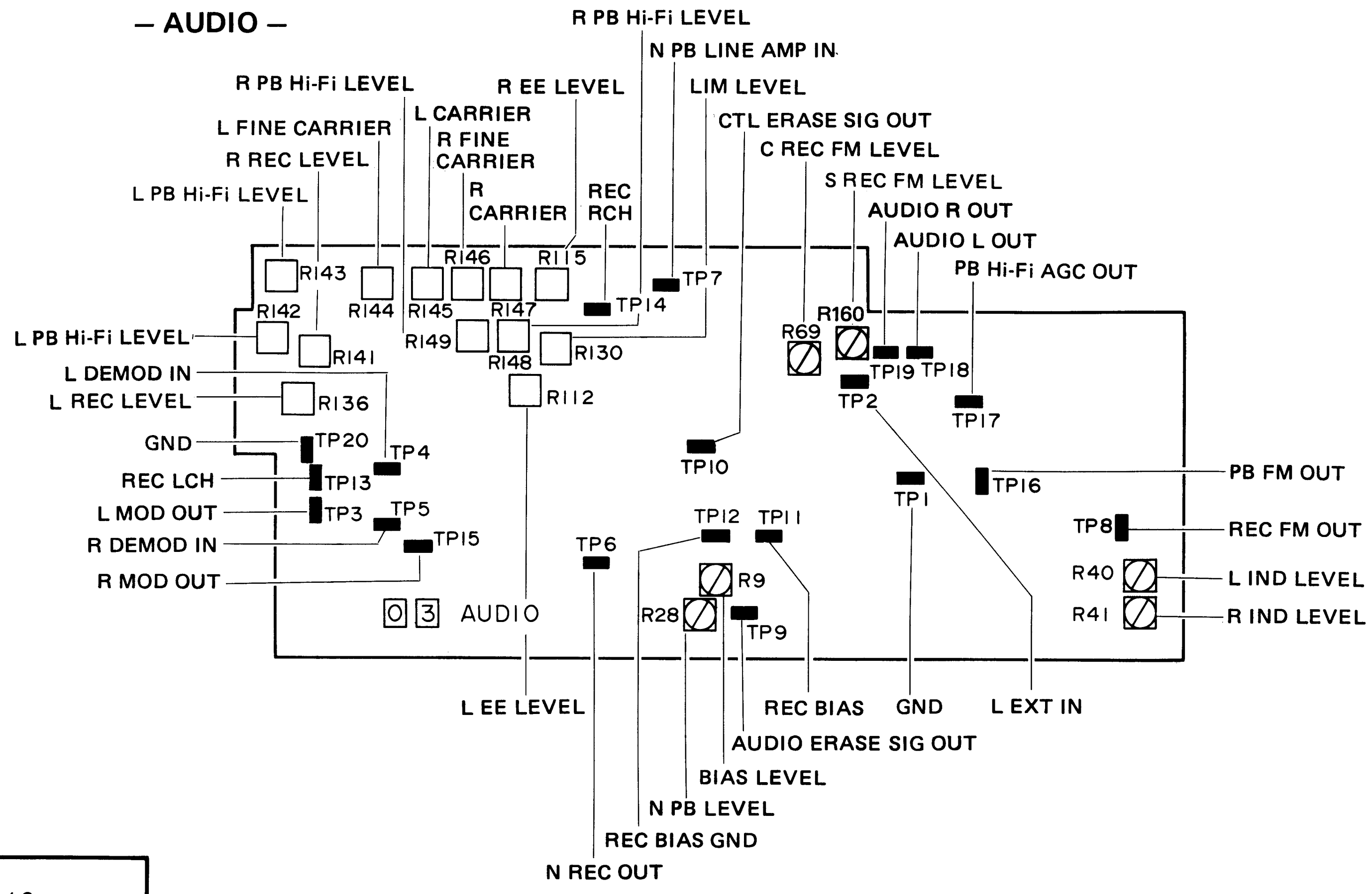
- **LOCATION OF TEST POINTS AND VRs ON THE DECK SECTION's BOARDS**

– S/S –



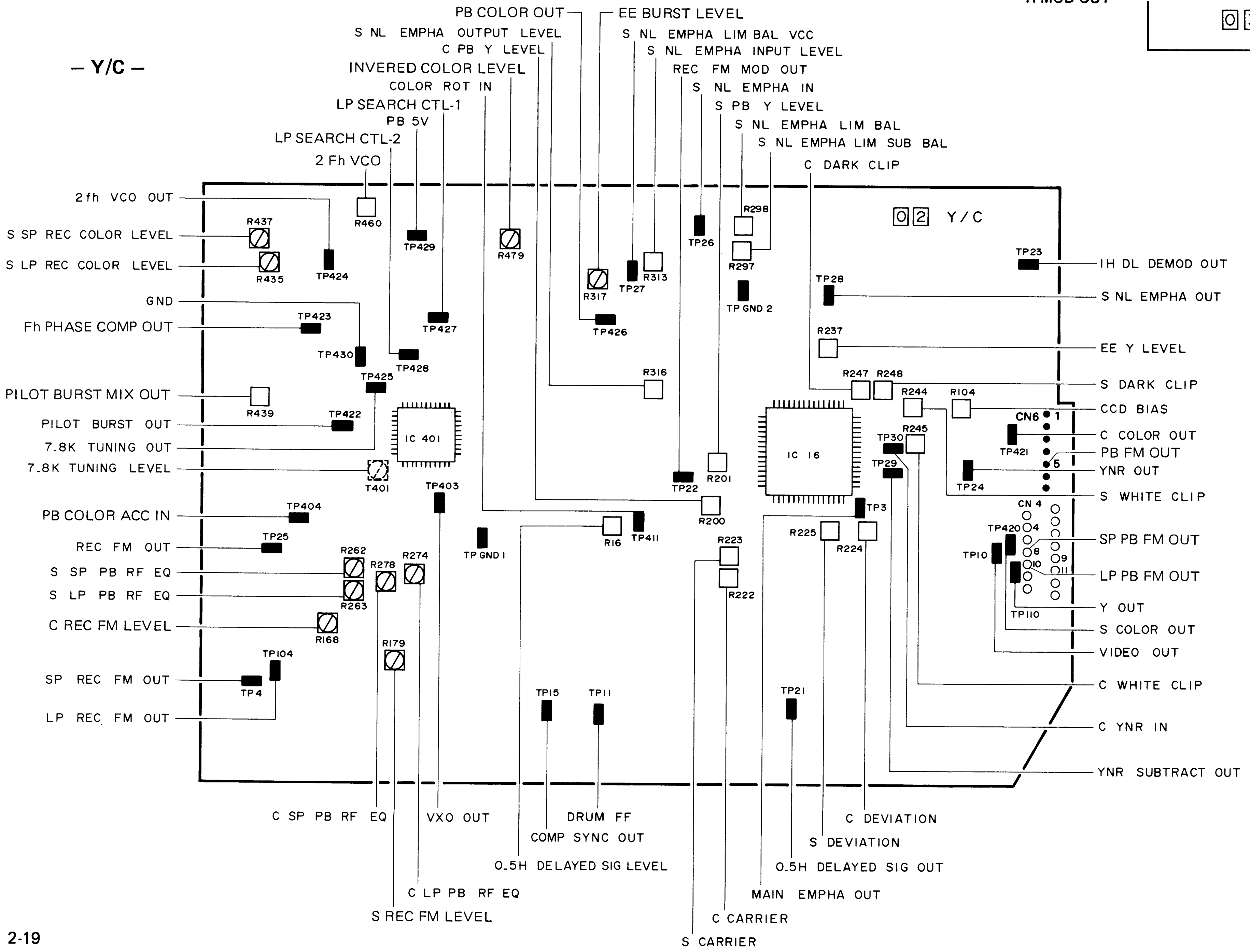
01 S/S
R210
REG 8 V
R7
PB SW POINT
Pin 49
IC 1
IC401
TP411
TP204
TP203
TP501
REG 8 V
VISS
REG 5 V
DRUM FF

– AUDIO –



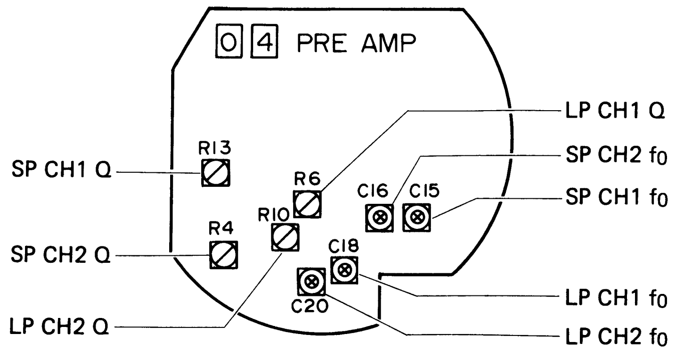
R PB Hi-Fi LEVEL
N PB LINE AMP IN
R PB Hi-Fi LEVEL
R EE LEVEL
LIM LEVEL
L CARRIER
L FINE CARRIER
R FINE CARRIER
CTL ERASE SIG OUT
R REC LEVEL
C REC FM LEVEL
S REC FM LEVEL
L PB Hi-Fi LEVEL
R CARRIER
REC RCH
AUDIO R OUT
AUDIO L OUT
PB Hi-Fi AGC OUT
R143
R142
R144
R145
R146
R147
R115
R149
R148
R130
R141
R136
R112
TP7
TP14
R69
R160
TP19
TP18
TP2
TP17
L PB Hi-Fi LEVEL
L DEMOD IN
L REC LEVEL
GND
REC LCH
L MOD OUT
R DEMOD IN
R MOD OUT
TP20
TP4
TP13
TP3
TP5
TP15
TP10
TP1
TP16
TP6
TP12
TP11
TP8
R9
R28
TP9
R40
R41
03 AUDIO
PB FM OUT
REC FM OUT
L IND LEVEL
R IND LEVEL
L EE LEVEL
REC BIAS
GND
L EXT IN
AUDIO ERASE SIG OUT
BIAS LEVEL
N PB LEVEL
REC BIAS GND
N REC OUT

– Y/C –



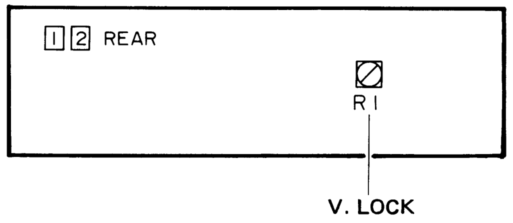
PB COLOR OUT
EE BURST LEVEL
S NL EMPHA OUTPUT LEVEL
S NL EMPHA LIM BAL VCC
C PB Y LEVEL
S NL EMPHA INPUT LEVEL
INVERED COLOR LEVEL
REC FM MOD OUT
COLOR ROT IN
S NL EMPHA IN
LP SEARCH CTL-1
S PB Y LEVEL
PB 5V
S NL EMPHA LIM BAL
LP SEARCH CTL-2
S NL EMPHA LIM SUB BAL
2 Fh VCO
C DARK CLIP
2fh VCO OUT
S SP REC COLOR LEVEL
S LP REC COLOR LEVEL
GND
Fh PHASE COMP OUT
PILOT BURST MIX OUT
PILOT BURST OUT
7.8K TUNING OUT
7.8K TUNING LEVEL
PB COLOR ACC IN
REC FM OUT
S SP PB RF EQ
S LP PB RF EQ
C REC FM LEVEL
SP REC FM OUT
LP REC FM OUT
R460
R437
TP429
R479
R435
TP424
TP423
TP427
TP430
TP428
TP425
R439
TP422
IC 401
T401
TP403
TP404
TP25
R262
R278
R274
R263
R168
R179
TP104
TP4
TP GND 1
TP15
TP11
R317
TP27
R313
TP426
R316
TP26
R298
R297
TP GND 2
R237
R247
R248
R244
R104
02 Y/C
TP23
TP28
IC 16
TP30
R245
TP29
CN6
1
5
TP421
TP24
TP22
R201
R200
R16
TP411
R223
R222
R225
R224
TP3
CN 4
TP420
4
8
10
9
11
TP10
TP110
TP21
1H DL DEMOD OUT
S NL EMPHA OUT
EE Y LEVEL
S DARK CLIP
CCD BIAS
C COLOR OUT
PB FM OUT
YNR OUT
S WHITE CLIP
SP PB FM OUT
LP PB FM OUT
Y OUT
S COLOR OUT
VIDEO OUT
C WHITE CLIP
C YNR IN
YNR SUBTRACT OUT
C SP PB RF EQ
VXO OUT
DRUM FF
COMP SYNC OUT
C DEVIATION
S DEVIATION
0.5H DELAYED SIG LEVEL
0.5H DELAYED SIG OUT
C LP PB RF EQ
MAIN EMPHA OUT
S REC FM LEVEL
C CARRIER
S CARRIER

– PRE AMP –



04 PRE AMP
SP CH1 Q
SP CH2 Q
LP CH2 Q
R13
R4
R6
R10
C16
C15
C18
C20
LP CH1 Q
SP CH2 fo
SP CH1 fo
LP CH1 fo
LP CH2 fo

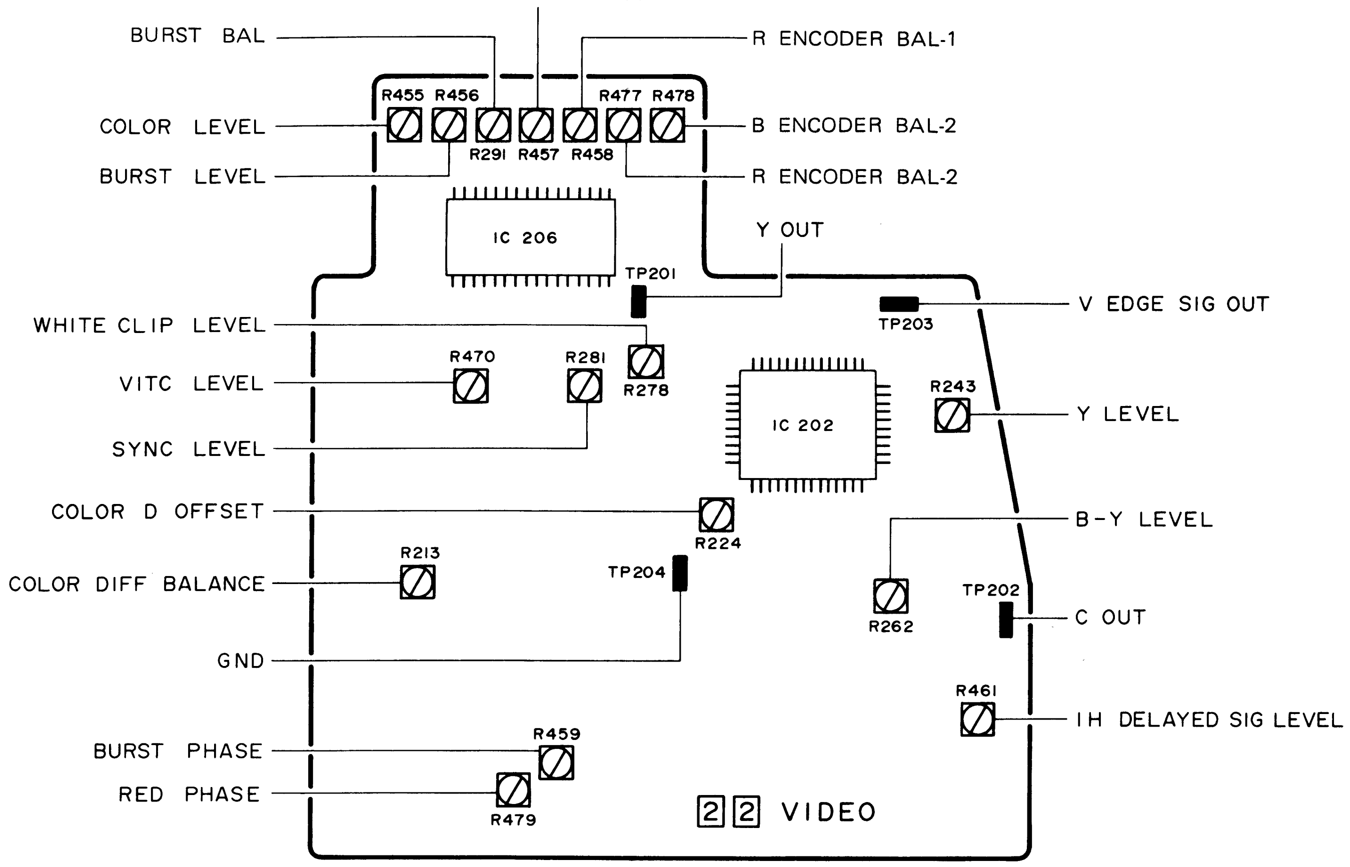
– REAR –



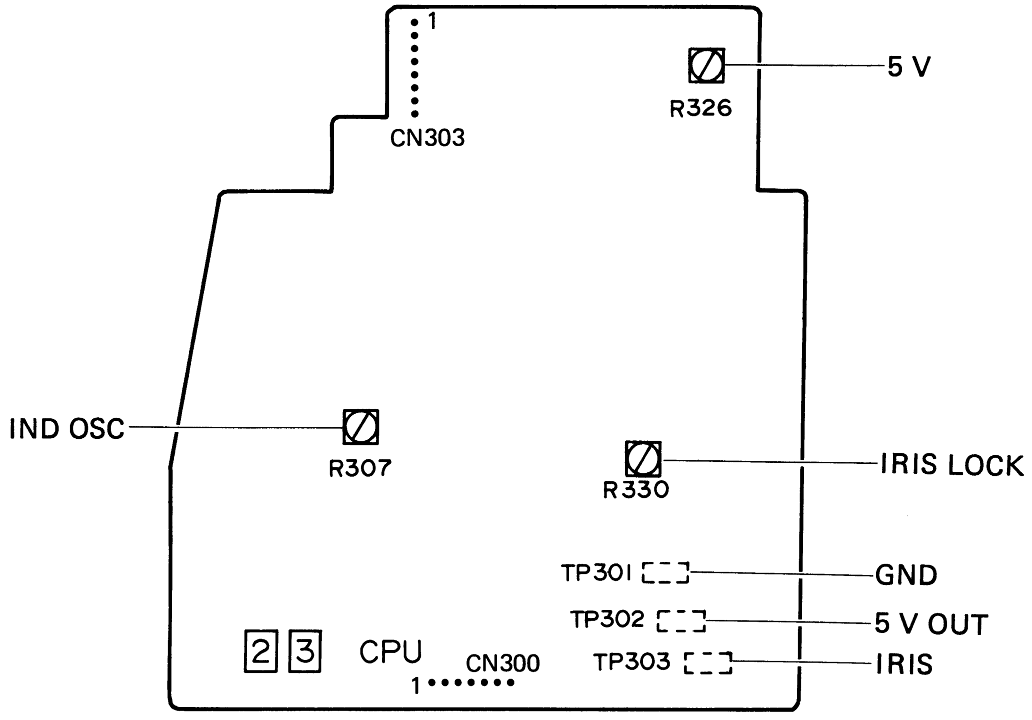
12 REAR
R1
V. LOCK

- **LOCATION OF TEST POINTS AND VRs ON THE CAMERA SECTION'S BOARDS**

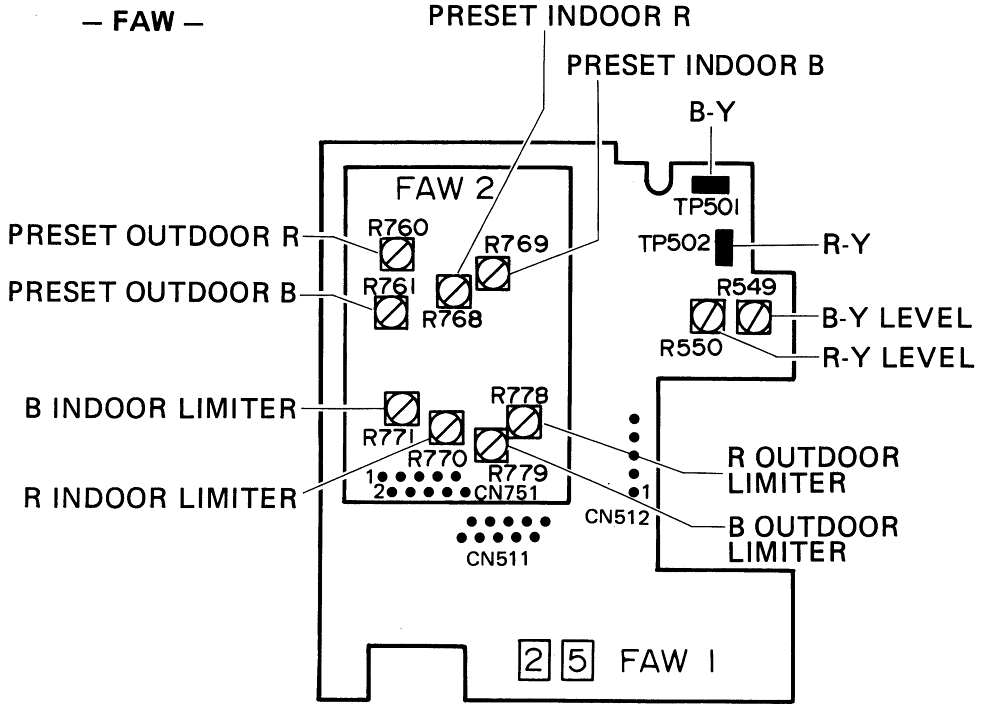
**– VIDEO –**


B ENCODER BAL-1
BURST BAL
R ENCODER BAL-1
R455
R456
R477
R478
COLOR LEVEL
B ENCODER BAL-2
R291
R457
R458
BURST LEVEL
R ENCODER BAL-2
IC 206
Y OUT
TP201
V EDGE SIG OUT
TP203
WHITE CLIP LEVEL
R470
R281
R278
VITC LEVEL
IC 202
R243
Y LEVEL
SYNC LEVEL
COLOR D OFFSET
R224
B-Y LEVEL
R213
TP204
COLOR DIFF BALANCE
R262
TP202
C OUT
GND
R461
1H DELAYED SIG LEVEL
R459
BURST PHASE
RED PHASE
R479
22 VIDEO

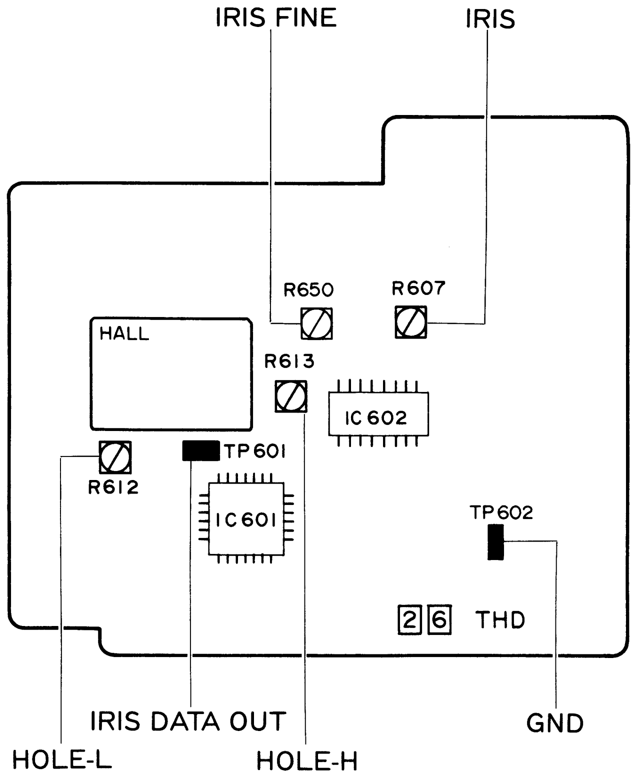
**– CPU –**


1
CN303
5 V
R326
IND OSC
R307
IRIS LOCK
R330
TP301
GND
TP302
5 V OUT
23 CPU
CN300
1
TP303
IRIS

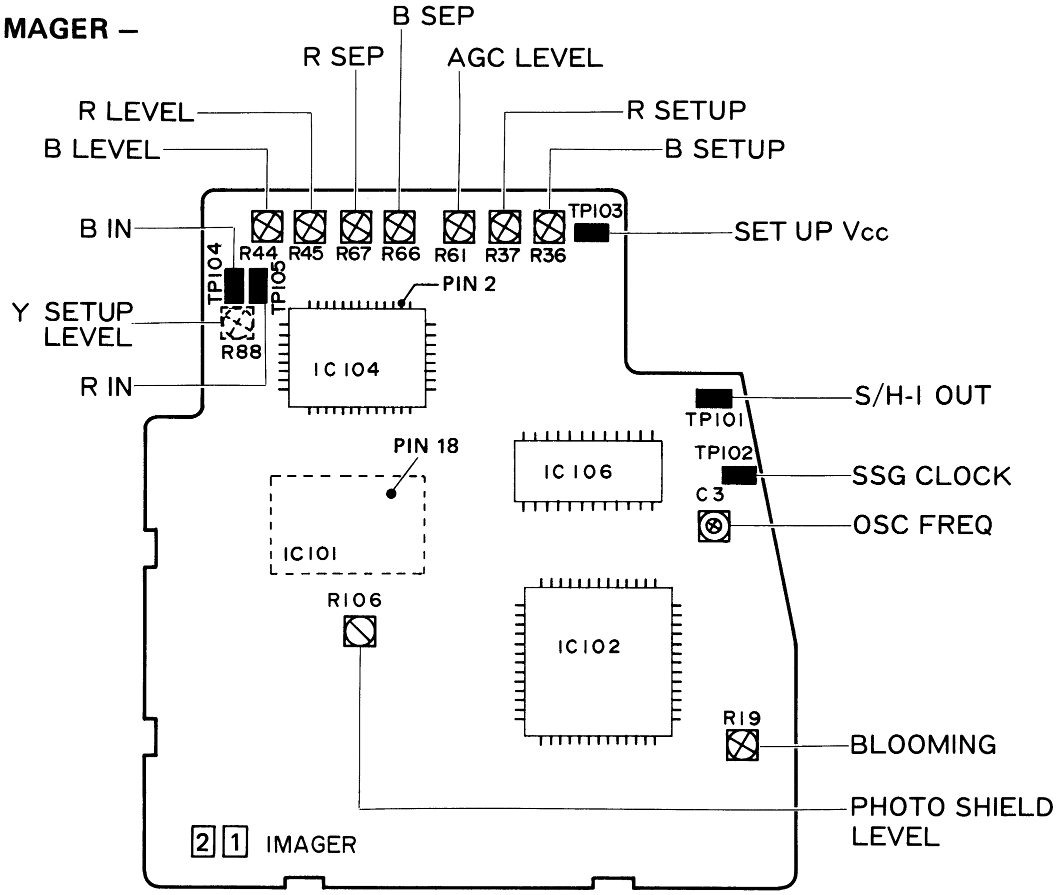
**– FAW –**


PRESET INDOOR R
PRESET INDOOR B
B-Y
TP501
FAW 2
TP502
R-Y
PRESET OUTDOOR R
R760
R769
PRESET OUTDOOR B
R761
R768
R549
B-Y LEVEL
R550
R-Y LEVEL
B INDOOR LIMITER
R778
R771
R770
R779
R OUTDOOR LIMITER
R INDOOR LIMITER
1
2
CN751
1
CN512
B OUTDOOR LIMITER
CN511
25 FAW 1

**– THD –**


IRIS FINE
IRIS
R650
R607
HALL
R613
IC602
R612
TP601
IC601
TP602
26 THD
HOLE-L
IRIS DATA OUT
HOLE-H
GND

**– IMAGER –**


B SEP
R SEP
AGC LEVEL
R LEVEL
R SETUP
B LEVEL
B SETUP
B IN
TP103
SET UP Vcc
R44
R45
R67
R66
R61
R37
R36
TP104
TP105
PIN 2
Y SETUP LEVEL
R88
IC104
R IN
S/H-I OUT
TP101
PIN 18
IC106
TP102
SSG CLOCK
C3
OSC FREQ
IC101
R106
IC102
R19
BLOOMING
PHOTO SHIELD LEVEL
21 IMAGER

# SECTION 3
# CAMERA SECTION ADJUSTMENT

## 3.1 PREPARATION

### 3.1.1 Precautions

1. Make sure to use 2 or more lighting apparatuses (3200 K in color temperature) and to light up the test pattern by them at 1200 lux or more brightly.
2. Use a clean test pattern and camera filters.
3. All adjustments must be performed in a room that shuts out other light than the specific illumination.
4. When observing waveforms by an oscilloscope at H-rate, connect its CH-B probe to TP201 (Y OUT) of the VIDEO board $\boxed{2}\boxed{2}$ for synchronized minus trigger, while connect the CH-A probe to a specified check point.
5. Unless otherwise specified, perform checkup and adjustment as the switches and controls are set to the following positions, respectively.

   1) Camera set to E-E mode
   - REHEARSAL button: ON

   2) Control buttons
   - FOCUS : MANUAL
   - IRIS : AUTO (no indication)
   - SHUTTER SPEED : STANDARD (no indication)
   - WHITE BALANCE : PRESET INDOOR
   - AGC : OFF

### 3.1.2 Hooking up

By attaching the camera holder tool to the camera section, it is possible to fit the camera section to the triped. (Fig. 3-1-1)

When adjusting the camera section, connect it as shown in Fig. 3-1-2 by using patch cords.

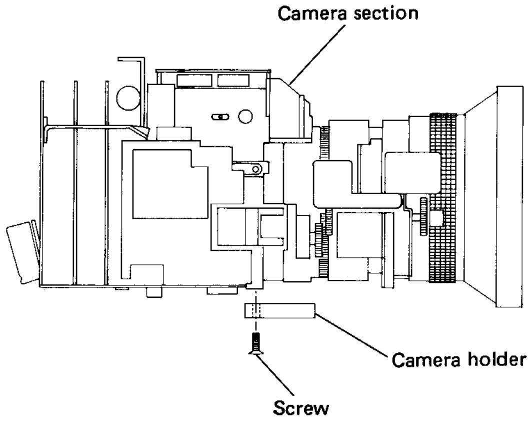

Camera section
Camera holder
Screw

Fig. 3-1-1

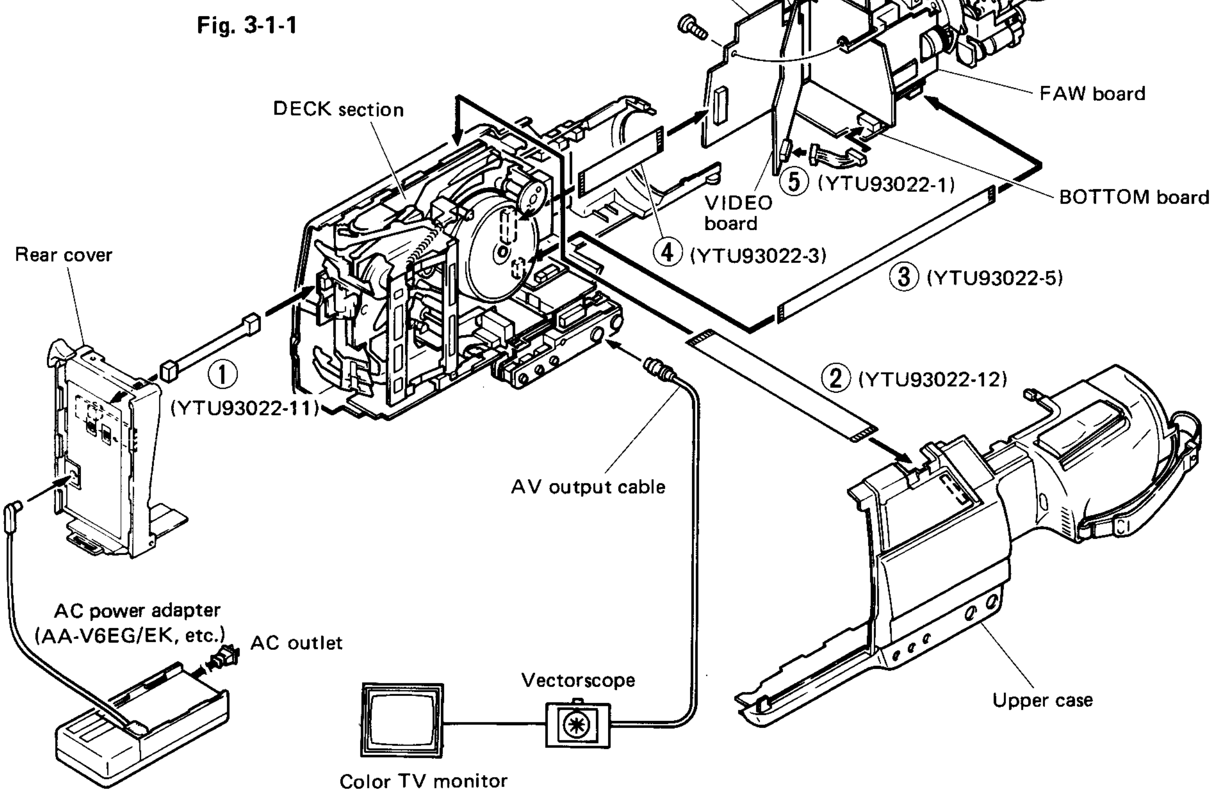
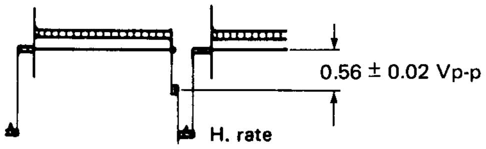
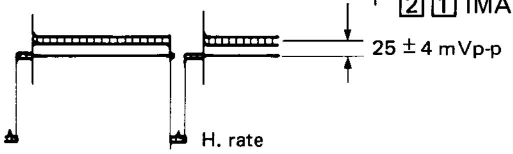
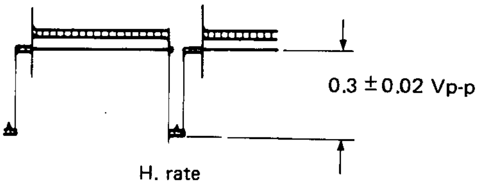
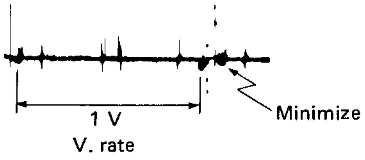
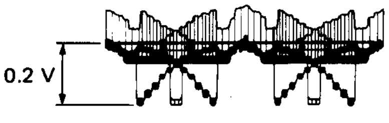
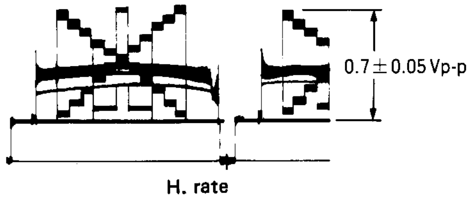
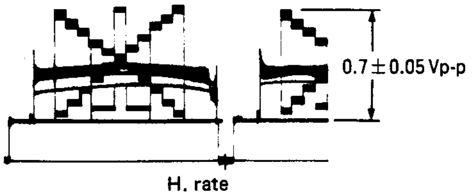
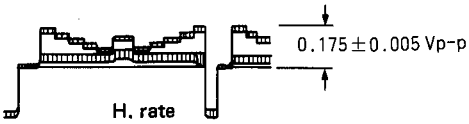

IMAGER board
CAMERA section
THD board
CPU board
FAW board
DECK section
⑤ (YTU93022-1)
VIDEO board
BOTTOM board
④ (YTU93022-3)
③ (YTU93022-5)
Rear cover
① (YTU93022-11)
② (YTU93022-12)
AV output cable
AC power adapter (AA-V6EG/EK, etc.)
AC outlet
Vectorscope
Upper case
Color TV monitor

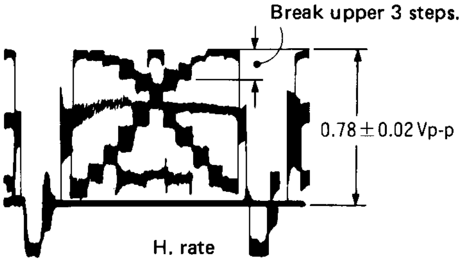
Fig. 3-1-2 Setup for adjustment

### 3.2 Y (LUMINANCE) SIGNAL SYSTEM

**Note:** 1) Keep in mind that if the previous adjustment is incorrect, the following adjustment will not be adjusted correctly.

| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 1 | SSG clock oscillation frequency | | • TP102<br>(SSG CLOCK)<br>[2][1] IMAGER | • C3<br>(OSC FREQ)<br>[2][1] IMAGER | 1) Connect a frequency counter to TP102, and adjust C4 for 12.875 MHz (824 x Fh) ± 40 Hz. |
| 2 | CCD photo shield level | | • IC101 pin 18<br>(PS OUT)<br>[2][1] IMAGER | • R106 (PHOTO SHIELD LEVEL)<br>[2][1] IMAGER | 1) Adjust R106 for 1.25 ± 0.01 V DC at pin 18 of IC101. |
| 3 | VITC level | • Lens closed | • TP201 (Y OUT)<br>[2][2] VIDEO<br>• CN300 pin 2<br>(REG 5 V)<br>• CN303 pin 7<br>(CHARACTOR)<br>[2][3] CPU<br><br> <br>Fig. 3-2-1 VITC level | • R470<br>(VITC level)<br>[2][2] VIDEO | 1) Close the lens with the cap.<br>2) Connect jump wire between CN300 pin 2 and CN303 pin 7.<br>3) Connect the oscilloscope to TP201 and adjust R470 for 0.56 Vp-p VITC level. |
| 4 | Y setup level | • Lens closed<br>• AGC : OFF | • TP201 (Y OUT)<br>[2][2] VIDEO<br><br> <br>Fig. 3-2-2 Y setup level | • R88 (Y SETUP) LEVEL)<br>[2][1] IMAGER | 1) Close the lens with the lens cap and set the AGC to OFF by the AGC button.<br>2) Adjust R88 for 25 mVp-p setup level at TP201. |
| 5 | Sync. level | • Lens closed | • TP201 (Y OUT)<br>[2][2] VIDEO<br><br> <br>Fig. 3-2-3 Sync. level | • R281 (SYNC LEVEL)<br>[2][2] VIDEO | 1) Close the lens with the cap.<br>2) Adjust R281 for 0.3 Vp-p sync. level at TP201. |
| 6 | Vertical enhancer balance | • Gray scale | • TP203<br>(V EDGE SIG OUT)<br>[2][2] VIDEO<br><br> <br>Fig. 3-2-4 V. edge | • R461<br>(1H DELAYED SIG LEVEL)<br>[2][2] VIDEO | 1) Pick up the gray scale and observe TP203.<br>2) Adjust R461 to minimize average level of V. edge signal. |
| 7 | Iris motor control reference voltage | | • TP302<br>(5 V OUT)<br>[2][3] CPU | • R326 (5 V)<br>[2][3] CPU | 1) Adjust R326 for 5.0 ± 0.1 V DC at TP302. |

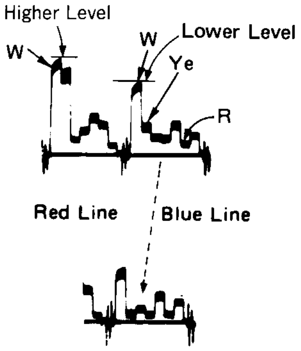
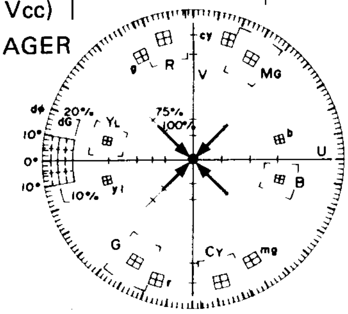
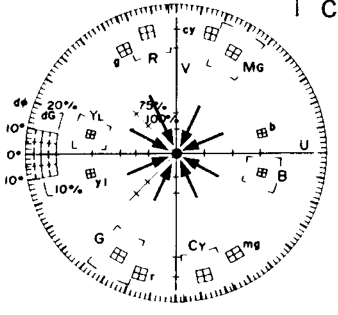
| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 8 | Iris motor control (rough adj.) | • Lens closed<br>• Iris: AUTO (No indication) | • TP601 (IRIS DATA OUT)<br>• TP602 (GND)<br>$\boxed{2}\boxed{6}$ THD | • R613 (HOLE-H)<br>$\boxed{2}\boxed{6}$ THD | 1) Close the lens with the cap.<br>2) Adjust R613 for 4.5 ± 0.1 V DC at TP601.<br>**Note:** Be careful of the voltage not to exceed 5.0 V DC at this adjustment. |
| | | • Lens closed<br>• Iris: MANUAL EF/–14 | | • R612 (HOLE-L)<br>$\boxed{2}\boxed{6}$ THD | 3) Close the lens with the cap. Set the exposure factor to "–14".<br>4) Adjust R612 for 1.0 ± 0.1 V DC at TP601. |
| 9 | Y level | • Gray scale | • TP101 (S/H-1 OUT)<br>$\boxed{2}\boxed{1}$ IMAGER<br>• TP201 (Y OUT)<br>$\boxed{2}\boxed{2}$ VIDEO | • R243 (Y LEVEL)<br>$\boxed{2}\boxed{2}$ VIDEO | 1) Pick up the gray scale and observe waveform at TP101 via 10 kΩ resistance.<br>2) Manually adjust the iris for 0.2 Vp-p video level. |
| | | |  <br>**Fig. 3-2-5** Y input level | | |
| | | |  <br>**Fig. 3-2-6** Y level | | 3) Connect the oscilloscope to TP201 and adjust R243 for 0.7 Vp-p video level. |
| 10 | Iris | • Gray scale<br>• Iiris: MANUAL (no indication for AUTO) | • TP201 (Y OUT)<br>$\boxed{2}\boxed{2}$ VIDEO | • R607 (IRIS)<br>$\boxed{2}\boxed{6}$ THD | 1) Pick up the gray scale and observe waveform at TP201.<br>2) Adjust R607 for 0.7 Vp-p video level.<br>**Note:** Turn R607 slowly from the side of high output to the low output side. |
| | | |  <br>**Fig. 3-2-7** Iris adjustment - 1 | | |
| | | • Iris: MANUAL EF/–13 | • TP201 (Y OUT)<br>$\boxed{2}\boxed{2}$ VIDEO | • R650 (IRIS FINE)<br>$\boxed{2}\boxed{6}$ THD | 3) Set the exposure factor to "–13".<br>4) Adjust R650 for 0.175 Vp-p video level. |
| | | |  <br>**Fig. 3-2-8** Iris adjustment - 2 | | |

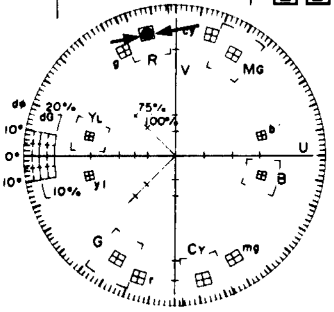
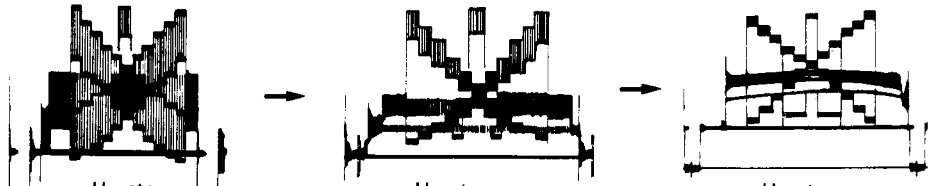
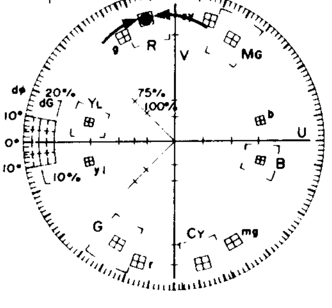
| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 11 | White clip level | • Gray scale<br>• Iris: MANUAL | • TP201 (Y OUT) 2 2 VIDEO<br><br> <br>Fig. 3-2-9 White clip level | • R278 (WHITE CLIP LEVEL) 2 2 VIDEO | 1) Pick up the gray scale and observe waveform at TP201.<br>2) Set the iris to 'MANUAL' and break the upper three steps of the gray scale on the oscilloscope screen.<br>3) Adjust R278 for 0.78 Vp-p video level. |
| 12 | AGC level | • Lens closed<br>• AGC: ON | • IC104 pin 2 (AGC DET OUT) 2 1 IMAGER | • R61 (AGC LEVEL) 2 1 IMAGER | 1) Close the lens with the cap.<br>2) Adjust R61 for 1.1 ± 0.1 V DC at pin 2 of IC104. |
| 13 | Blooming | | • TV monitor | • R19 (BLOOMING) 2 1 IMAGER | 1) Pick up a fluorescent light and adjust R19 to minimize blooming.<br>**Note:** No matter how further R19 is turned, there will be no change in blooming observed on the monitor. Therefore, set R19 to a position where blooming becomes minimum for the first time and won't change any more even if R19 is turned further. |
| 14 | Iris motor control (fine-adj.) | • Lens closed<br>• Iris: AUTO (no indication)<br>• Lens closed<br>• Iris: MANUAL EF/–14 | • TP601 (IRIS DATA OUT)<br>• TP602 (GND) 2 6 THD | • R613 (HOLE-H) 2 6 THD<br>• R612 (HOLE-L) 2 6 THD | 1) Close the lens with the cap.<br>2) Adjust R613 for 4.5 ± 0.1 V DC at TP601.<br>**Note:** Make sure of the voltage not to exceed 5.0 V DC at the adjustment.<br>3) Close the lens with the cap. Set the exposure factor to "–14".<br>4) Adjust R612 for 1.0 ± 0.1 V DC at TP601. |
| 15 | Iris lock | • White pattern<br>• Iris: MANUAL | • TP303 (IRIS CTL OUT) 2 3 CPU<br>• TP601 (IRIS DATA OUT) 2 6 THD | • R330 (IRIS LOCK) 2 3 CPU | 1) Pick up a white pattern.<br>2) Set the IRIS SW to 'MANUAL' and measure voltage at TP303.<br>3) Adjust R330 so that voltage of TP601 becomes equal to that of TP303. |
| 16 | Indicator | • Lens closed | • TV monitor | • R307 (IND OSC) 2 3 CPU | 1) Set the DISPLAY SELECT switch to ON and turn the focus lens until the "Correct focus" indication appears in the electronic viewfinder.<br>2) Adjust R307 to position the "Correct focus" indication in the center of the viewfinder screen. |

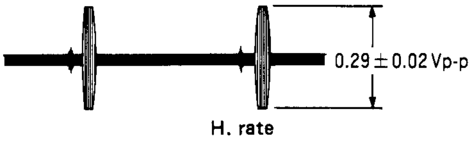
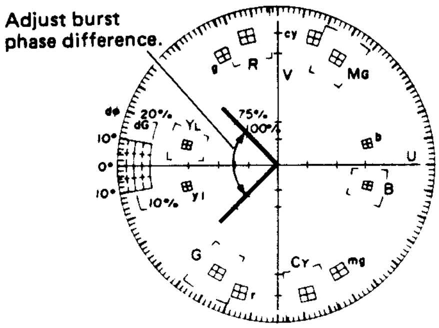
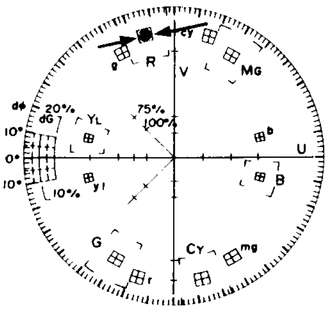
## 3.3 COLOR SIGNAL SYSTEM

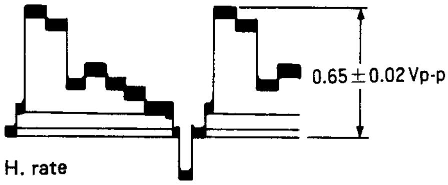
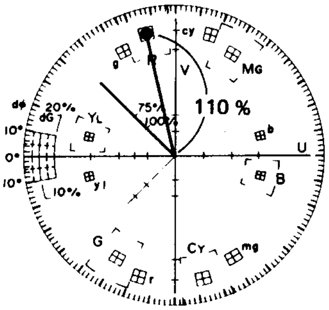
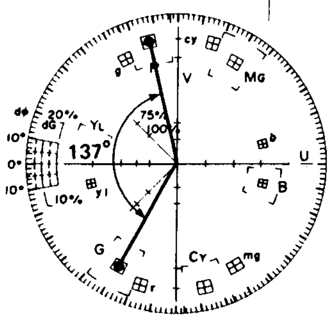
**Note:** 1) Keep in mind that if the privious adjustment is incorrect, the following adjustment will not be adjusted carrectly.

### 3.3.1 Standard indoor mode

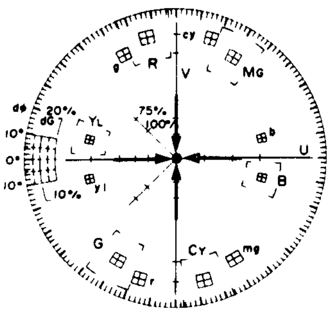
| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 1 | R/B separation | • Color bar | • TP105 (R IN)<br>• TP104 (B IN)<br>[2][1] IMAGER<br>• TP201 (Y OUT) (Ext. trigger)<br>[2][2] VIDEO<br> <br>Fig. 3-3-1 R/B separation | • R67 (R SEP)<br>• R66 (B SEP)<br>[2][1] IMAGER | 1) Pick up the color bar with just scan and connect an oscilloscope to TP105.<br>2) When TP201 is swept with external trigger and the oscilloscope is set to HOLD OFF mode, observe only the blue line.<br>3) Adjust R67 to equalize levels of yellow and red.<br>**Note:** Blue line means a line in which white level is lower than another line.<br>4) Connect the oscilloscope to TP104.<br>5) Adjust R66 for the same purpose of the above steps 2) and 3). |
| 2 | Color difference offset | • Lens closed<br>• Jump wire between GND and TP103 (SET UP Vcc)<br>[2][2] IMAGER | • Vectorscope<br> <br>Fig. 3-3-2 Color difference offset | • R224 (COLOR D OFFSET)<br>[2][2] VIDEO | 1) Close the lens with the cap.<br>2) Shortcircuit TP103 to GND for zero setup level.<br>3) Adjust R224 so that dots meet with each other at the same point on the vectorscope. |
| 3 | Encoder balance | • Lens closed<br>• Jump wire between GND and TP103 (SETUP Vcc) | • Vectorscope<br> <br>Fig. 3-3-3 Encoder balance | • R458 (R ENCODER BAL-1)<br>• R477 (R ENCODER BAL-2)<br>• R457 (B ENCODER BAL-1)<br>• R478 (B ENCODER BAL-2) | 1) Close the lens with the cap.<br>2) Shortcircuit TP103 to GND for zero setup level.<br>3) Adjust R458, R477, R457 and R478 alternately to center every dot with minimum fluctuation on the vectorscope. |

| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 4 | Color difference balance | • Color bar | • Vectorscope | • R213 (C.D. BALANCE)<br>$\boxed{2}\boxed{2}$ VIDEO | 1) Pick up the color bar.<br>2) Adjust R213 to minimize fluctuation of red dot. |
| | | |  R<br>MG<br>YL<br>20%<br>75%<br>100%<br>10°<br>0°<br>10°<br>10%<br>U<br>B<br>G<br>CY<br>Fig. 3-3-4 R. color difference balance | | |
| 5 | White balance standard level | • Gray scale | • CN512 pin 1 or CN751 pin 8 (R CTL OUT)<br>• CN512 pin 2 or CN751 pin 9 (B CTL OUT)<br>$\boxed{2}\boxed{5}$ FAW | • R768 (PRESET INDOOR R)<br>• R769 (PRESET INDOOR B)<br>$\boxed{2}\boxed{5}$ FAW | 1) Pick up the gray scale.<br>2) Adjust R768 for 2.45 V ± 0.02 V DC at CN-512 pin 1.<br>3) Adjust R769 for 2.75 V ± 0.02 V DC at CN-512 pin 2. |
| 6 | White balance | • Gray scale | • TP10 (VIDEO OUT)<br>$\boxed{0}\boxed{2}$ Y/C | • R36 (B SETUP)<br>• R37 (R SETUP)<br>• R44 (B LEVEL)<br>• R45 (R LEVEL)<br>$\boxed{2}\boxed{1}$ IMAGER | 1) Pick up the gray scale with just scan and observe waveform at TP10.<br>2) Adjust R36 and R37 alternately to minimize carrier leakage in the low level.<br>3) Adjust R44 and R45 alternately to minimize carrier leakage in the high level.<br>4) Repeat the above steps 2) and 3) to minimize carrier leakage.<br>5) Use a vectorscope and a TV monitor to confirm that carrier leakage is minimized. |
| | | |  <br>A. White balance - 1<br>B. White balance - 2<br>C. White balance - 3<br>Fig. 3-3-5 White balance | | |
| 7 | Burst balance | • Color bar | • Vectorscope | • R291 (BURST BAL)<br>$\boxed{2}\boxed{2}$ VIDEO | 1) Pick up the color bar pattern with just scan.<br>2) Adjust R291 so that phase of red component is matched to red phase direction on the vectorscope.<br>3) If necessary, check Item 3 "Color difference balance". |
| | | |  R<br>MG<br>YL<br>20%<br>75%<br>100%<br>10°<br>0°<br>10°<br>10%<br>U<br>B<br>G<br>CY<br>Fig. 3-3-6 C. difference balance | | |

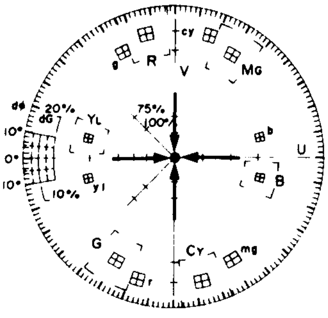
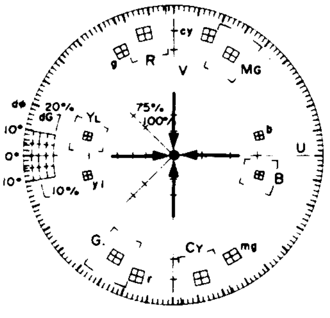
| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 8 | Burst level | • Lens closed | • TP202 (C OUT)<br>2 2 VIDEO<br><br> 0.29 ± 0.02 Vp-p<br>H. rate<br>Fig. 3-3-7 Burst level | • R456 (BURST LEVEL)<br>2 2 VIDEO | 1) Close the lens with the cap.<br>2) Connect the oscilloscope to TP202 and adjust R456 for 0.29 Vp-p burst level. |
| 9 | Burst phase | • Color bar | • Vectorscope<br><br> Adjust burst phase difference.<br>R<br>V<br>MG<br>YL<br>75%<br>100%<br>20%<br>dG<br>dφ<br>10°<br>0°<br>10°<br>10%<br>U<br>B<br>G<br>CY<br>Fig. 3-3-8 Burst phase | • R459 (BURST PHASE)<br>2 2 VIDEO | 1) Pick up the color bar.<br>2) Adjust R459 so that burst phase difference becomes 90°. |
| 10 | Red phase | • Color bar | • Vectorscope<br><br> R<br>V<br>MG<br>YL<br>75%<br>100%<br>20%<br>dG<br>dφ<br>10°<br>0°<br>10°<br>10%<br>U<br>B<br>G<br>CY<br>Fig. 3-3-9 Red phase | • R479 (RED PHASE)<br>2 2 VIDEO | 1) Pick up the color bar pattern with just scan.<br>2) Adjust R479 so that phase of red component is matched to the red phase direction on the vectorscope. |

| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 11 | Color level | • Color bar<br>• Iris: MANUAL | • TP201 (Y OUT) [2][2] VIDEO<br>• Vectorscope<br><br> 0.65±0.02Vp-p<br>H. rate<br>Fig. 3-3-10 Y level<br><br> 110 %<br>75%<br>100%<br>20%<br>10%<br>dG<br>dφ<br>10°<br>0°<br>10°<br>cy<br>MG<br>YL<br>V<br>U<br>B<br>G<br>CY<br>mg<br>Fig. 3-3-11 Color level | • R455 (COLOR LEVEL) [2][2] VIDEO | 1) Pick up the color bar.<br>2) Manually adjust the exposure factor so that video signal level is 0.65 Vp-p at TP201.<br>3) Adjust R455 so that red level becomes 110% of burst level on the vectorscope. |
| 12 | Color phase | • Color bar | • Vectorscope<br><br> 137°<br>75%<br>100%<br>20%<br>10%<br>dG<br>dφ<br>10°<br>0°<br>10°<br>cy<br>MG<br>YL<br>V<br>U<br>B<br>G<br>CY<br>mg<br>Fig. 3-3-12 Color phase | • R262 (B-Y LEVEL) [2][2] VIDEO | 1) Pick up the color bar with just scan.<br>2) Adjust R262 so that each phase of red and green components is matched to each phase direction on the vectorscope.<br>**Note:** Pick up the skin color and confirm that reproduction of the color is normal. If necessary, use R262 (B-Y LEVEL) and R459 (BURST PHASE) for adjustment. |

### 3.3.2 Preset outdoor white balance

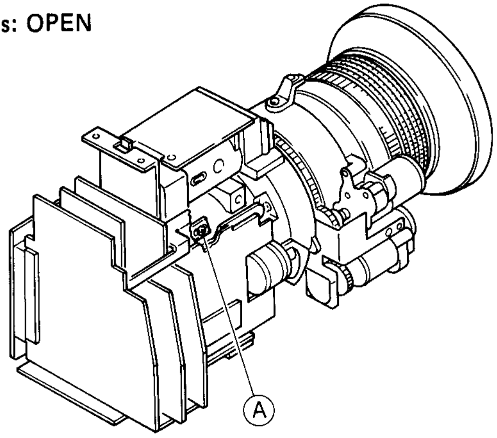
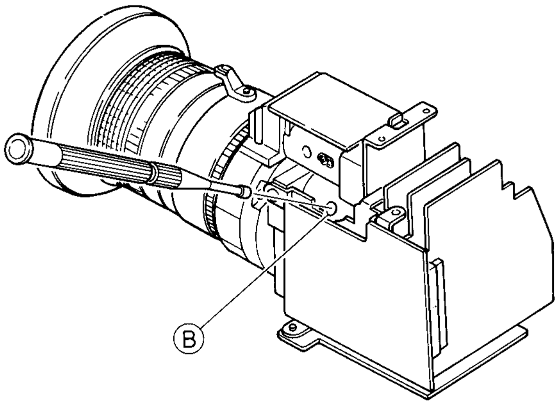
| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 1 | Preset Outdoor | • Gray scale<br>• White balance: OUTDOOR<br>• C12 filter<br>• CC10B filter (onto lens) | • Vectorscope<br><br>Fig. 3-3-13 Preset outdoor white balance | • R760 (PRESET OUTDOOR R)<br>• R761 (PRESET OUTDOOR B)<br>2 5 FAW | 1) Pick up the gray scale.<br>2) Set the LCD's white balance mode to the OUTDOOR.<br>3) Attach a C12 + CC10B filter to the lens.<br>4) Adjust R760 and R761 alternately so that every dot centers on the vectorscope. |

### 3.3.3 Auto white balance

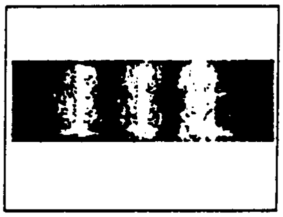
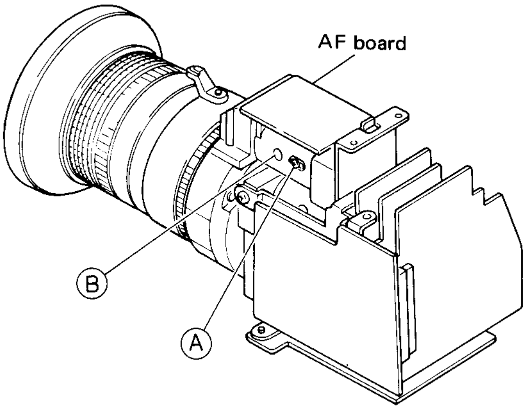
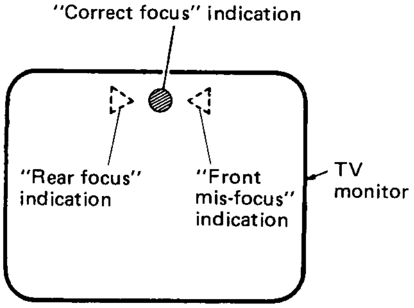
| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 1 | Auto white | • Gray scale<br>• White balance: AUTO<br>• C6 filter (onto lens)<br>• Iris: MANUAL EF/–5 | • Vectorscope<br><br>Fig. 3-3-14 Auto white | • R550 (R-Y LEVEL)<br>• R549 (B-Y LEVEL)<br>2 5 FAW | 1) Set the LCD's white balance mode to the AUTO.<br>2) Attach a C6 filter to the lens.<br>3) Adjust R550 and R549 alternately so that every dot centers on the vectorscope. |
| 2 | Limiter | • Gray scale<br>• White balance: AUTO<br>• Jump wires<br>• Iris: MANUAL EF/–5<br>• W4 filter (onto lens) | • Vectorscope<br>• CN512 pin 4 (B-Y LEVEL)<br>• CN512 pin 3 (R-Y LEVEL)<br>2 5 FAW | • R779 (B OUT-DOOR LIMITER)<br>• R778 (R OUT-DOOR LIMITER)<br>2 5 FAW | 1) Pick up the gray scale.<br>2) Attach a W4 filter to the lens.<br>3) Connect jump wires between CN512 pin 3 and CN751 pin 1, and between CN512 pin 4 and CN751 pin 1.<br>4) Adjust R779 and R778 alternately so that every dot centers on the vectorscope. |
| | | • C14 filter<br>• CC10B filter (onto lens) | • CN751 pin 2 (GND)<br>• CN751 pin 1 (5 V)<br>2 5 FAW<br><br>Fig. 3-3-15 Limiter | • R771 (B INDOOR LIMITER)<br>• R770 (R INDOOR LIMITER)<br>2 5 FAW | 5) Disconnect jump wires.<br>6) Attach a C14 + CC10B filter to the lens.<br>7) Connect jump wire between CN512 pin 3 and CN751 pin 2, and between CN512 pin 4 and CN751 pin 2.<br>8) Adjust R771 and R770 alternately so that every dot centers on the vectorscope.<br>9) Repeat the above steps 2) through 7) twice. |

## 3.4 FOCUS

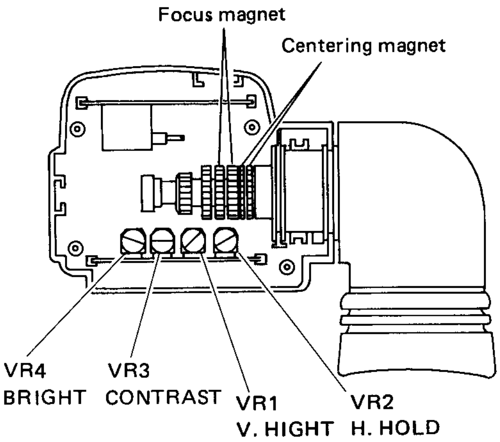
### 3.4.1 Back focus

| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 1 | Back focus | • Subject in the distance of 15 m or farther<br>• Focus SW: MANUAL<br>• Iris: OPEN<br><br> <br>**Fig. 3-4-1** Back focus adjusting position<br><br> <br>**Fig. 3-4-2** Master lens adjusting position | • TV monitor | • Master lens | 1) Pick up a subject in the distance of about 2 m with MANUAL FOCUS mode, confirm that the subject is in focus by every setting of the lens from the wide angle position to the telephoto position.<br>2) Set the lens to the telephoto end (12 mm in focal distance) and shoot a subject in the distance of 15 m or farther.<br>3) Change the shutter speed to open the iris. (At this time, confirm the LIGHT indication appearing on the TV monitor.)<br>4) Set the focus ring to "∞".<br>5) Loosen the screw Ⓐ. Observing focusing of the lens on the TV monitor, adjust the position of the master lens Ⓑ with a back focus adjusting tool.<br>6) After the adjustment, tighten the scrww Ⓐ and confirm step 3).<br>7) After adjustment, confirm step 1). |

### 3.4.2 Auto focus

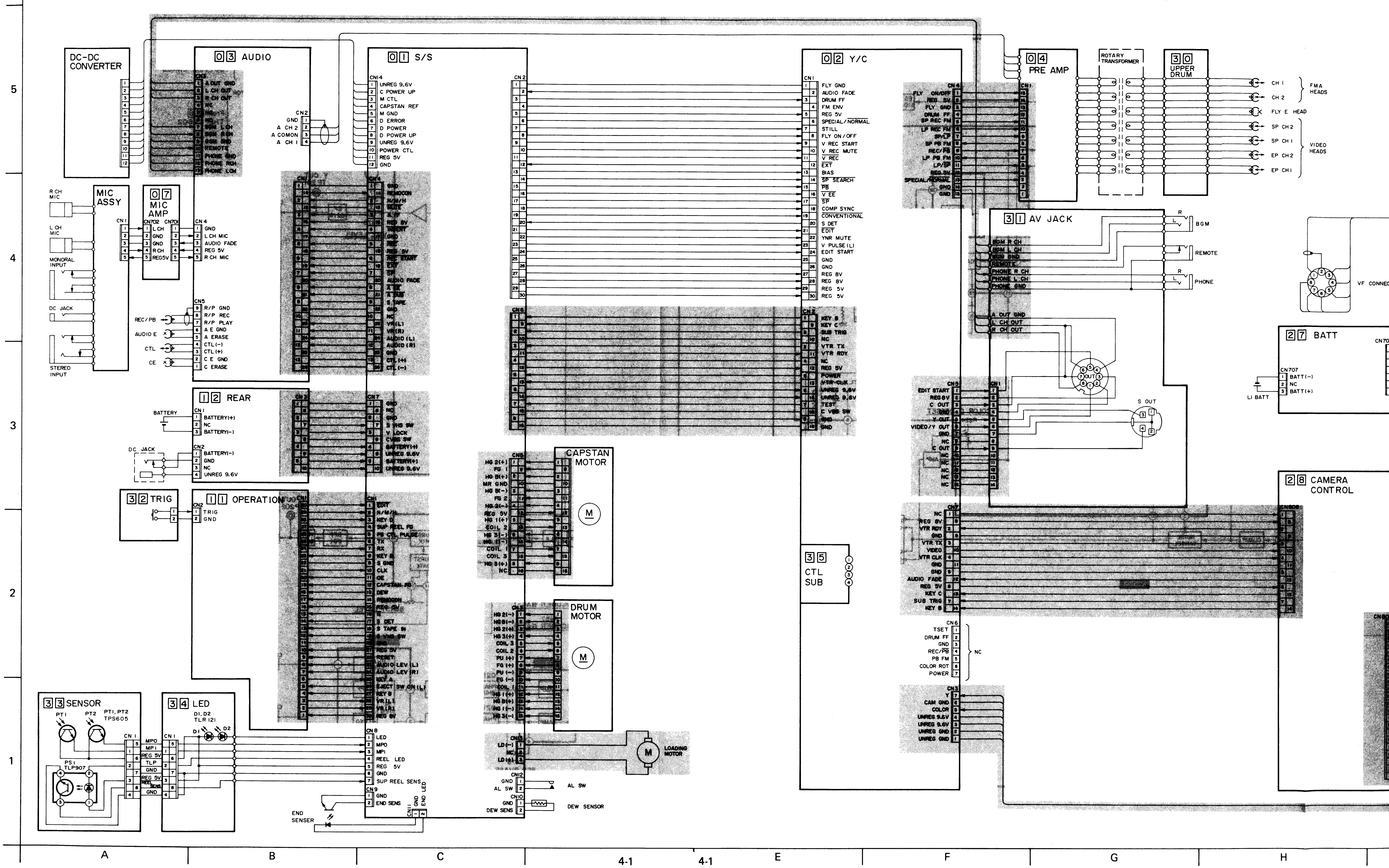
| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 1 | AF lens | • Subject in the distance of 2 m<br>• Focus SW: MANUAL<br>• Auto focus chart<br>• Iris: OPEN | • TV monitor | • AF lens | **Note:** Prior to auto focus adjustment, confirm that back focus of the camera has been correctly adjusted.<br>1) Set the lens to the telephoto end and shoot an AF chart (S chart) as it is set in the distance of 2 m approx.<br>2) Change the shutter speed and open the iris. (At this time, confirm that the LIGHT indication is displayed on the TV monitor.)<br>3) Turning the focus ring manually, focus the lens on the subject. At that time, confirm that the "Correct focus" indication stably lights in the viewfinder.<br>4) If necessary, perform the following steps.<br>5) Loosen the screw Ⓐ under the AF unit (Fig. 3-4-4), and insert eccentric driver into the AF lens holeⒷ.<br>6) Move the AF lens forward and rearward with the eccentric driver so that the "Correct focus" indication lights stably.<br>7) Tighten the screw Ⓐ.<br>**Note:** Do not disturb VRs on the AF board. |
| | | | <br>Fig. 3-4-3 AF chart<br><br> <br>Fig. 3-4-4 AF adjusting positions | | |
| | | • Focus SW: AUTO | <br> "Correct focus" indication<br>"Rear focus" indication<br>"Front mis-focus" indication<br>TV monitor<br>Fig. 3-4-5 Indication of focusing | | 8) Pick up a subject in the distance of 2—3 m by the auto focus operation, confirm that the subject is in focus in every case where the focus lens is initially set for 1.1 m and for the infinity (∞).<br>(When a resolution chart is shot by manual focusing, deterioration in resolution must be less than 90%.)<br>If necessary, repeat the above steps 5) to 7).<br>**Note:** When assembling the camera section with the deck section and when attaching the upper case, do the work to stress the main lens and the AF lens evenly. |

## 3.5 ELECTRONIC VIEWFINDER (E. VF)

| No. | Item | Mode & Signal | Check Point | Adjustment Parts | Procedure |
|---|---|---|---|---|---|
| | | | Waveform & Adjustment | | |
| 1 | Horizontal sync.<br><br> Focus magnet<br>Centering magnet<br>VR4<br>BRIGHT<br>VR3<br>CONTRAST<br>VR1<br>V. HIGHT<br>VR2<br>H. HOLD<br>Fig. 3-5-1 Locations of E. VF VRs | • No signal | • E. VF | • VR2 (H.HOLD)<br>$\boxed{4}\boxed{1}$ E. VF | 1) Observing the viewfinder, turn VR2 fully clockwise to make unstable pictures.<br>2) Gradually turn VR2 counterclockwise until the picture becomes stable.<br>Mark the VR position where the picture is completely stable.<br>3) Turn VR2 fully counterclockwise to make the picture unstable again.<br>4) Turn VR2 gradually clockwise until the picture is stabilized. Mark the VR position in the same manner as in 2) above.<br>5) Set the VR at the midpoint of the two markings.<br>**Note:** The correct VR setting makes pin 22 of IC1 oscillates at 16.3 ± 0.01 kHz. |
| 2 | Vertical scanning | • Alignment tape SP stairstep (MHPE-C or MH-C2) | • E. VF | • VR1 (V. SIZE)<br>$\boxed{4}\boxed{1}$ E. VF | 1) Observing the viewfinder screen, adjust VR1 for normal picture amplitude. |
| 3 | Centering | • Alignment tape SP stairstep (MHPE-C or MH-C2) | • E. VF | • Centering magnet | 1) Adjust the centering magnet so that the gray scale image appears in the center of the viewfinder screen. |
| 4 | Focus | • Alignment tape SP stairstep (MHPE-C or MH-C2) | • E. VF | • Focus magnet | 1) Observing the viewfinder screen, adjust the focus magnet of the deflection yoke to obtain a clear picture in the center of the gray scale. |
| 5 | Brightness | • Iris: Closed (Lens closed) | • E. VF | • VR4 (BRIGHT)<br>$\boxed{4}\boxed{1}$ E. VF | 1) Close the iris and adjust VR4 so that the raster of the CRT is just barely visible in the viewfinder. |
| 6 | Contrast | • Alignment tape SP stairstep (MHPE-C or MH-C2) | • E. VF | • VR3 (CONT.)<br>$\boxed{4}\boxed{1}$ E. VF | 1) Observing the viewfinder screen, adjust VR3 so that gradation of the gray scale becomes the best. |

# SECTION 4
# OVERALL WIRING AND BLOCK DIAGRAMS

## 4.1 OVERALL WIRING



DC-DC CONVERTER
03 AUDIO
01 S/S
02 Y/C
04 PRE AMP
ROTARY TRANSFORMER
30 UPPER DRUM
CH 1
CH 2
FMA HEADS
FLY E HEAD
SP CH 2
SP CH 1
EP CH 2
EP CH 1
VIDEO HEADS
MIC ASSY
R CH MIC
L CH MIC
MONORAL INPUT
DC JACK
STEREO INPUT
07 MIC AMP
CN702
CN701
L CH
GND
R CH
REG5V
CN4
GND
L CH MIC
AUDIO FADE
REG 5V
R CH MIC
CN5
R/P GND
R/P REC
R/P PLAY
A E GND
A ERASE
CTL(−)
CTL(+)
C E GND
C ERASE
REC/PB
AUDIO E
CTL
CE
CN2
GND
A CH 2
A COMON
A CH 1
CN3
A OUT GND
L CH OUT
R CH OUT
NC
BGM L CH
BGM R CH
BGM GND
REMOTE
PHONE GND
PHONE R CH
PHONE L CH
CN14
UNREG 9.6V
C POWER UP
M CTL
CAPSTAN REF
M GND
D ERROR
D POWER
D POWER UP
UNREG 9.6V
POWER CTL
REG 5V
GND
CN1
FLY GND
AUDIO FADE
DRUM FF
FM ENV
REG 5V
SPECIAL/NORMAL
STILL
FLY ON/OFF
V REC START
V REC MUTE
V REC
EXT
BIAS
SP SEARCH
PB
V EE
SP
COMP SYNC
CONVENTIONAL
S DET
EDIT
YNR MUTE
V PULSE (L)
EDIT START
GND
GND
REG 8V
REG 8V
REG 5V
REG 5V
CN4
FLY ON/OFF
REG 5V
FLY GND
DRUM FF
SP REC FM
LP REC FM
SP/LP
SP PB FM
REC/PB
LP PB FM
LP/SP
REG 5V
SPECIAL/NORMAL
GND
GND
31 AV JACK
BGM
REMOTE
PHONE
BGM R CH
BGM L CH
BGM GND
REMOTE
PHONE R CH
PHONE L CH
PHONE GND
A OUT GND
L CH OUT
R CH OUT
OUT
S OUT
CN5
EDIT START
REG 8V
C OUT
Y OUT
VIDEO/Y OUT
GND
NC
C OUT
NC
VF CONNEC
27 BATT
CN707
BATT(−)
NC
BATT(+)
LI BATT
28 CAMERA CONTROL
CN7
NC
REG 8V
VTR RDY
GND
VTR TX
VIDEO
VTR CLK
GND
GND
AUDIO FADE
REG 5V
KEY C
SUB TRIG
KEY B
CN6
TSET
DRUM FF
GND
REC/PB
PB FM
COLOR ROT
POWER
NC
CN3
Y
CAM GND
COLOR
UNREG 9.6V
UNREG 9.6V
UNREG GND
UNREG GND
CN7
KEY B
KEY C
SUB TRIG
NC
VTR TX
VTR RDY
NC
REG 5V
POWER
VTR CLK
UNREG 9.6V
UNREG 9.6V
TEST
C VBB SW
GND
GND
35 CTL SUB
12 REAR
BATTERY
CN1
BATTERY(+)
NC
BATTERY(−)
DC JACK
CN2
BATTERY(−)
GND
NC
UNREG 9.6V
32 TRIG
CN2
TRIG
GND
11 OPERATION
CAPSTAN MOTOR
CN5
HG 2(+)
FG 1
HG B(+)
MR GND
HG B(−)
FG 2
HG 2(−)
REG 5V
HG 1(+)
COIL 2
HG 3(−)
HG 1(−)
COIL 1
COIL 3
HG 3(+)
NC
M
DRUM MOTOR
CN3
HG 2(−)
HG B(−)
HG 2(+)
HG 3(+)
COIL 3
COIL 2
PU (+)
FG (+)
PU (−)
FG (−)
COIL 1
HG 1(+)
HG B(+)
HG 1(−)
HG 3(−)
M
CN13
LD(−)
NC
LD(+)
LOADING MOTOR
CN12
GND
AL SW
AL SW
CN10
GND
DEW SENS
DEW SENSOR
33 SENSOR
PT1
PT2
PT1, PT2 TPS605
PS1 TLP907
CN1
MPO
MP1
REG 5V
TLP
GND
REG 5V
REEL SENS
GND
34 LED
D1, D2 TLR 121
D1
D2
CN1
CN8
LED
MPO
MP1
REEL LED
REG 5V
GND
SUP REEL SENS
CN9
GND
END SENS
END SENSER
CN11
GND
END LED
A
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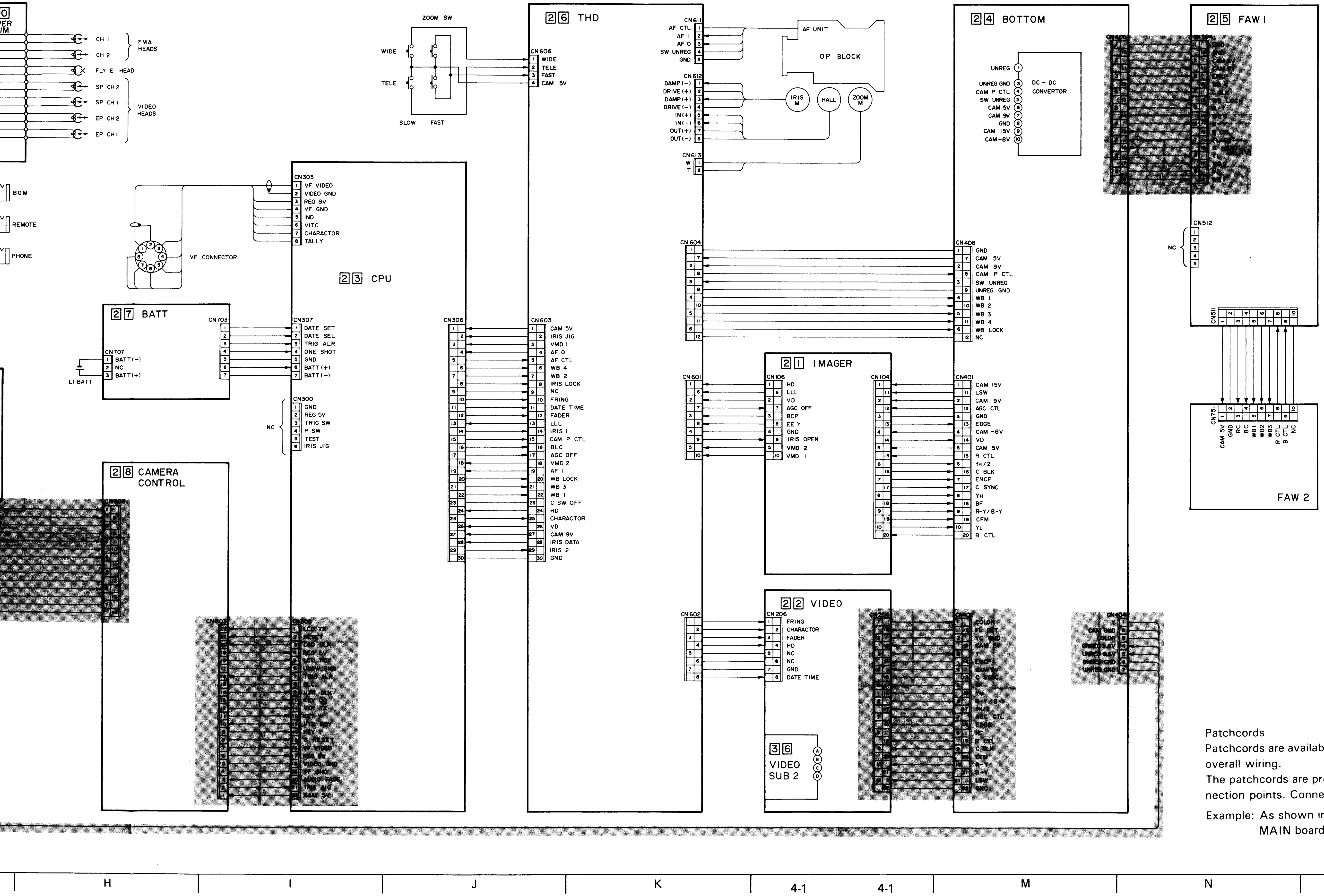
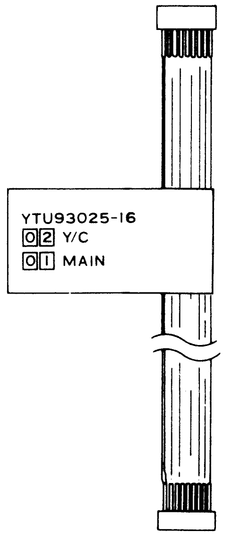

CH 1
CH 2
FMA HEADS
FLY E HEAD
SP CH 2
SP CH 1
EP CH 2
EP CH 1
VIDEO HEADS
BGM
REMOTE
PHONE
ZOOM SW
WIDE
TELE
SLOW
FAST
VF CONNECTOR
2 7 BATT
CN703
CN707
1 BATT(−)
2 NC
3 BATT(+)
LI BATT
2 8 CAMERA CONTROL
CN808
CN803
2 3 CPU
CN303
1 VF VIDEO
2 VIDEO GND
3 REG 8V
4 VF GND
5 IND
6 VITC
7 CHARACTOR
8 TALLY
CN307
1 DATE SET
2 DATE SEL
3 TRIG ALR
4 ONE SHOT
5 GND
6 BATT (+)
7 BATT (−)
CN300
NC
1 GND
2 REG 5V
3 TRIG SW
4 P SW
5 TEST
6 IRIS JIG
CN306
CN308
1 LCD TX
2 RESET
3 LCD CLK
4 REG 5V
5 LCD RDY
6 UNSW GND
7 TRIG ALR
8 BLC
9 VTR CLK
10 KEY Ⓧ
11 VTR TX
12 KEY W
13 VTR RDY
14 KEY 1
15 S RESET
16 VF VIDEO
17 REG 8V
18 VIDEO GND
19 VF GND
20 AUDIO FADE
21 IRIS JIG
22 CAM 5V
2 6 THD
CN606
1 WIDE
2 TELE
3 FAST
4 CAM 5V
CN603
1 CAM 5V
2 IRIS JIG
3 VMD 1
4 AF O
5 AF CTL
6 WB 4
7 WB 2
8 IRIS LOCK
9 NC
10 FRING
11 DATE TIME
12 FADER
13 LLL
14 IRIS 1
15 CAM P CTL
16 BLC
17 AGC OFF
18 VMD 2
19 AF 1
20 WB LOCK
21 WB 3
22 WB 1
23 C SW OFF
24 HD
25 CHARACTOR
26 VD
27 CAM 9V
28 IRIS DATA
29 IRIS 2
30 GND
CN611
AF CTL 1
AF 1 2
AF O 3
SW UNREG 4
GND 5
CN612
DAMP (−) 1
DRIVE (+) 2
DAMP (+) 3
DRIVE (−) 4
IN (+) 5
IN (−) 6
OUT (+) 7
OUT (−) 8
CN613
W 1
T 2
AF UNIT
OP BLOCK
IRIS M
HALL
ZOOM M
CN604
CN601
CN602
2 1 IMAGER
CN106
1 HD
6 LLL
2 VD
7 AGC OFF
3 BCP
8 EE Y
4 GND
9 IRIS OPEN
5 VMD 2
10 VMD 1
CN104
2 2 VIDEO
CN206
1 FRING
2 CHARACTOR
3 FADER
4 HD
5 NC
6 NC
7 GND
8 DATE TIME
3 6 VIDEO SUB 2
Ⓐ Ⓑ Ⓒ Ⓓ
CN205
2 4 BOTTOM
UNREG ①
UNREG GND ③
CAM P CTL ④
SW UNREG ⑤
CAM 5V ⑥
CAM 9V ⑦
GND ⑧
CAM 15V ⑨
CAM −8V ⑩
DC − DC CONVERTOR
CN405
CN406
1 GND
7 CAM 5V
2 CAM 9V
8 CAM P CTL
3 SW UNREG
9 UNREG GND
4 WB 1
10 WB 2
5 WB 3
11 WB 4
6 WB LOCK
12 NC
CN401
1 CAM 15V
11 LSW
2 CAM 9V
12 AGC CTL
3 GND
13 EDGE
4 CAM −8V
14 VD
5 CAM 5V
15 R CTL
6 fH/2
16 C BLK
7 ENCP
17 C SYNC
8 YH
18 BF
9 R-Y/B-Y
19 CFM
10 YL
20 B CTL
CN402
1 COLOR
12 FL DET
2 YC GND
13 CAM 5V
3 Y
14 ENCP
4 CAM 9V
15 C SYNC
5 BF
16 YH
6 R−Y/B−Y
17 fH/2
7 AGC CTL
18 EDGE
8 NC
19 R CTL
9 C BLK
20 CFM
10 R−Y
21 B−Y
11 LSW
22 GND
CN404
Y 1
CAM GND 2
COLOR 3
UNREG 9.6V 4
UNREG 9.6V 5
UNREG GND 6
UNREG GND 7
2 5 FAW 1
CN504
1 GND
10 GND
2 CAM 5V
11 CAM 9V
3 ENCP
12 WB 4
4 C BLK
13 WB LOCK
5 B−Y
14 WB 3
6 R−Y
15 B CTL
7 FL DET
16 R CTL
8 YL
17 WB 2
9 VD
18 WB 1
CN512
NC
CN511
CN751
CAM 5V
GND
RC
BC
WB1
WB2
WB3
R CTL
B CTL
NC
FAW 2
H
I
J
K
M
N
O

| NO | PWB NAME |
|---|---|
| 36 | VIDEO SUB 2 |
| 35 | CTL SUB |
| 34 | LED |
| 33 | SENSOR |
| 32 | TRIG |
| 31 | AV JACK |
| 30 | UPPER DRUM |
| 29 | |
| 28 | CAMERA CONTROL |
| 27 | BATT |
| 26 | THD |
| 25 | FAW 1 |
| 24 | BOTTOM |
| 23 | CPU |
| 22 | VIDEO |
| 21 | IMAGER |
| | |
| | |
| | |
| | |
| 12 | REAR |
| 11 | OPERATION |
| 10 | |
| 09 | |
| 08 | |
| 07 | MIC AMP |
| 06 | |
| 05 | |
| 04 | PRE AMP |
| 03 | AUDIO |
| 02 | Y/C |
| 01 | S/S |


YTU93025-16
0 2 Y/C
0 1 MAIN

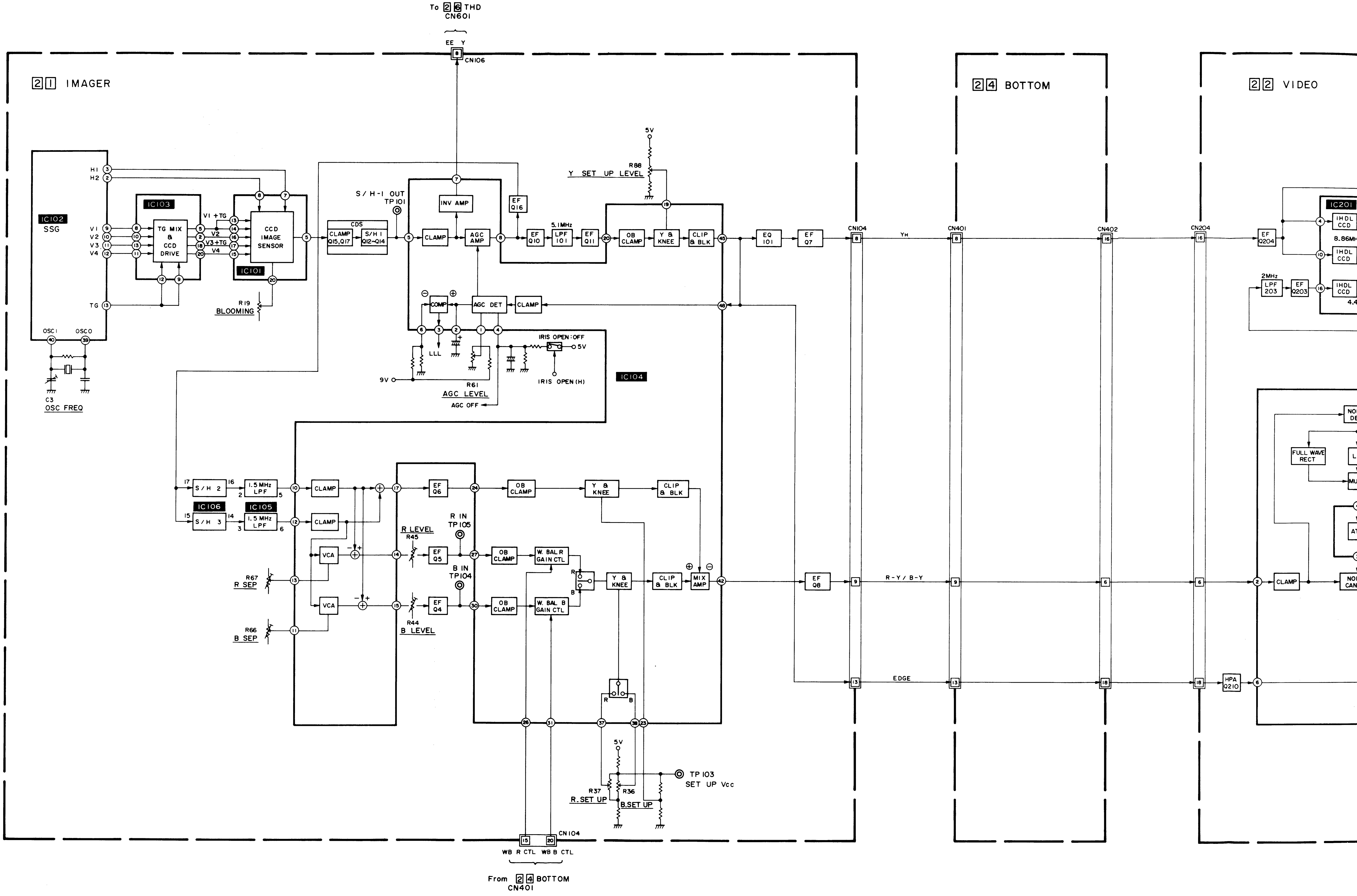
Patchcords

Patchcords are available for blue shaded portions of the overall wiring.

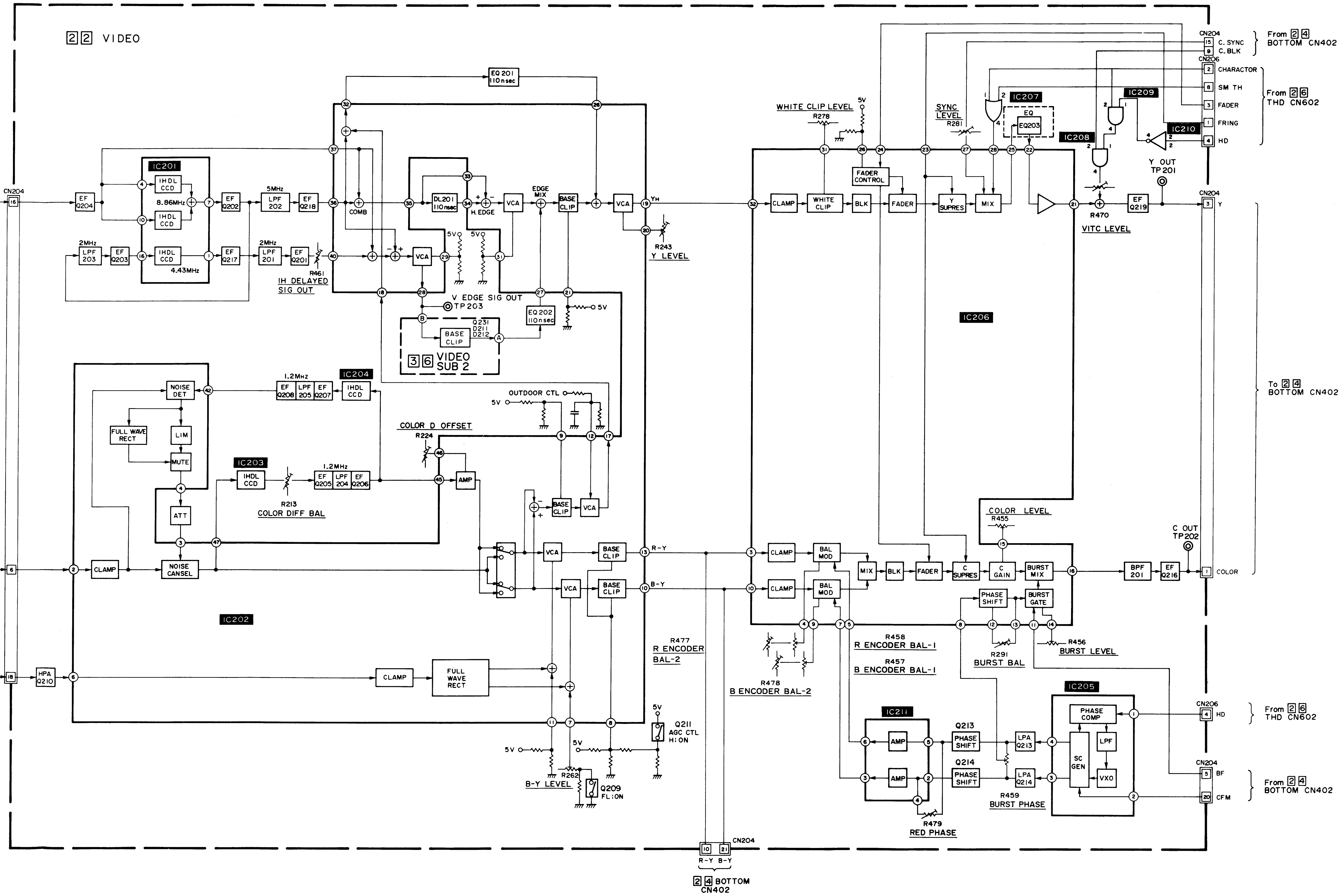
The patchcords are provided with **tags** to indicate connection points. Connect as indicated.

Example: As shown in the Figure, connect one side to MAIN board and the other to Y/C board.

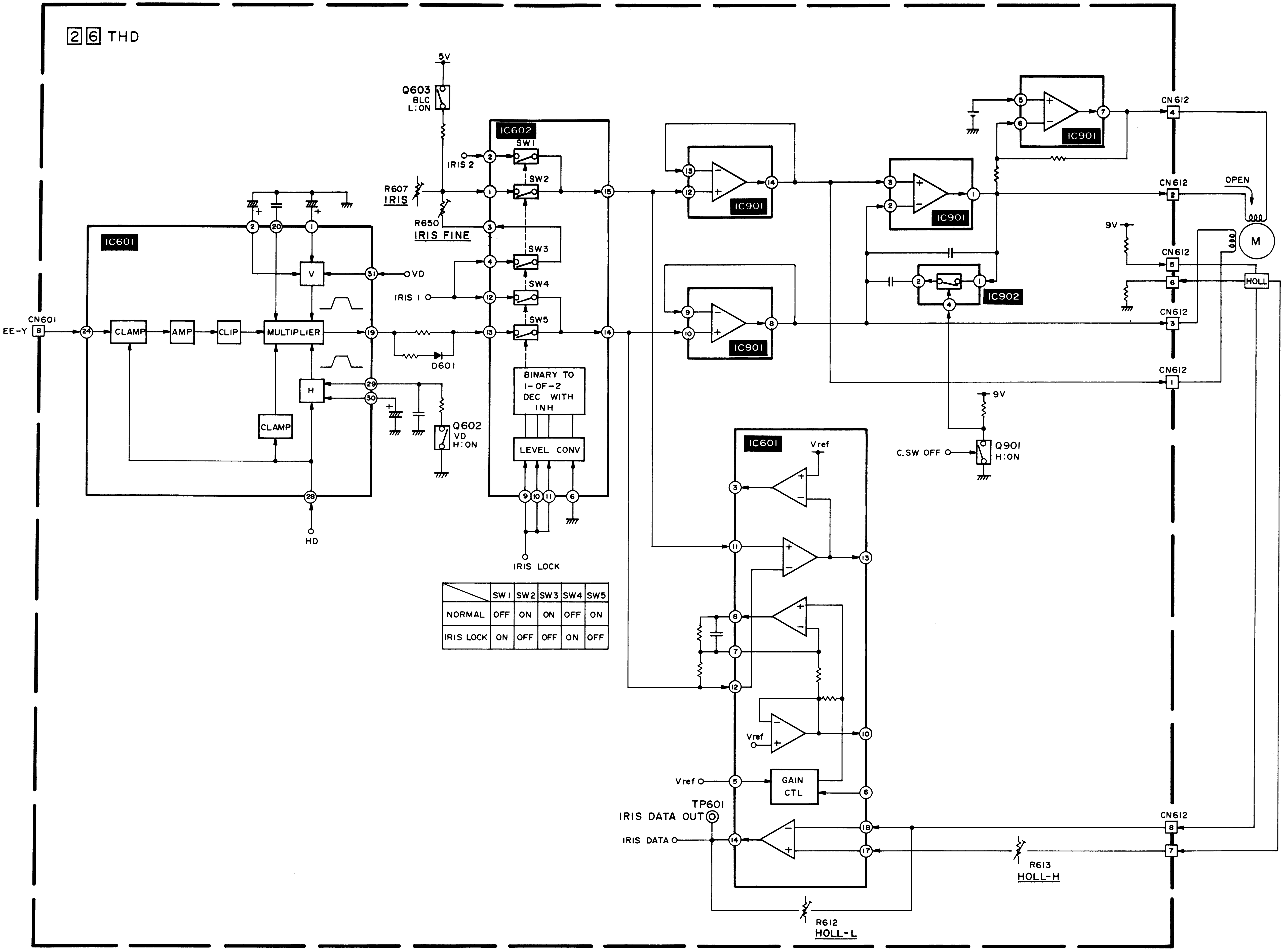
## 4.2 VIDEO & IMAGER BLOCK DIAGRAMS


To 26 THD CN601
EE Y
CN106
21 IMAGER
24 BOTTOM
22 VIDEO
IC102 SSG
H1
H2
V1
V2
V3
V4
TG
OSCI
OSCO
C3 OSC FREQ
IC103
TG MIX & CCD DRIVE
V1 +TG
V2
V3 +TG
V4
CCD IMAGE SENSOR
IC101
R19 BLOOMING
CDS
CLAMP Q15,Q17
S/H I Q12~Q14
S/H-I OUT TP101
CLAMP
INV AMP
AGC AMP
EF Q16
COMP
AGC DET
CLAMP
LLL
9V
R61 AGC LEVEL
AGC OFF
IRIS OPEN : OFF
5V
IRIS OPEN (H)
IC104
EF Q10
5.1MHz LPF 101
EF Q11
OB CLAMP
Y & KNEE
CLIP & BLK
R88 Y SET UP LEVEL
5V
EQ 101
EF Q7
CN104
YH
CN401
CN402
CN204
EF Q204
IC201
IHDL CCD
8.86MH
IHDL CCD
2MHz LPF 203
EF Q203
IHDL CCD
S/H 2
1.5MHz LPF
IC106
S/H 3
IC105
1.5MHz LPF
CLAMP
CLAMP
VCA
VCA
R67 R SEP
R66 B SEP
EF Q6
R LEVEL R45
R IN TP105
EF Q5
B IN TP104
EF Q4
R44 B LEVEL
OB CLAMP
Y & KNEE
CLIP & BLK
OB CLAMP
W. BAL R GAIN CTL
OB CLAMP
W. BAL B GAIN CTL
Y & KNEE
CLIP & BLK
MIX AMP
EF Q8
R-Y / B-Y
EDGE
HPA Q210
CLAMP
FULL WAVE RECT
R B
5V
TP 103 SET UP Vcc
R37 R.SET UP
R36 B.SET UP
CN104
WB R CTL WB B CTL
From 24 BOTTOM CN401

5
4
3
2
1
A
B
C
E
F
G
H

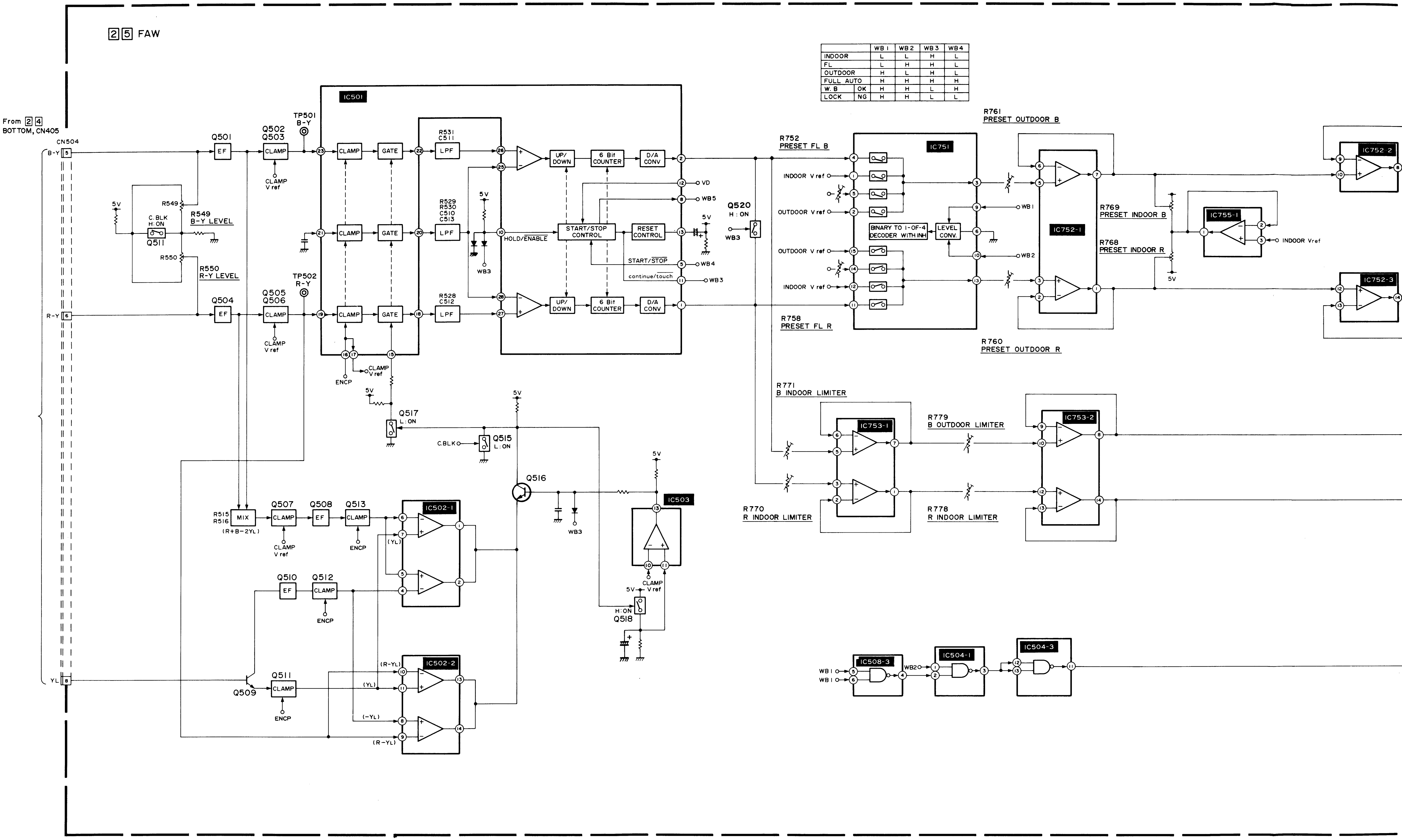

22 VIDEO
CN204
EF Q204
IC201
IHDL CCD
8.86MHz
4.43MHz
EF Q202
EF Q217
5MHz
LPF 202
EF Q218
2MHz
LPF 203
EF Q203
LPF 201
EF Q201
R461
1H DELAYED SIG OUT
EQ 201 110nsec
COMB
DL201 110nsec
H. EDGE
VCA
EDGE MIX
BASE CLIP
5V
V EDGE SIG OUT
TP203
EQ 202 110nsec
Q231 D211 D212
36 VIDEO SUB 2
YH
R243
Y LEVEL
IC204
1.2MHz
EF Q208
LPF 205
EF Q207
NOISE DET
FULL WAVE RECT
LIM
MUTE
ATT
IC203
IHDL CCD
R213
COLOR DIFF BAL
EF Q205
LPF 204
EF Q206
COLOR D OFFSET
R224
AMP
OUTDOOR CTL
CLAMP
NOISE CANSEL
IC202
R-Y
B-Y
HPA Q210
FULL WAVE RECT
B-Y LEVEL
R262
Q209 FL:ON
Q211 AGC CTL H:ON
R477
R ENCODER BAL-2
CN204
R-Y B-Y
24 BOTTOM CN402
WHITE CLIP LEVEL
R278
WHITE CLIP
BLK
FADER CONTROL
FADER
SYNC LEVEL
R281
Y SUPRES
MIX
IC207
EQ
EQ203
IC208
IC209
IC210
R470
VITC LEVEL
EF Q219
Y OUT TP201
IC206
CN204
C. SYNC
C. BLK
From 24 BOTTOM CN402
CN206
CHARACTOR
SM TH
FADER
FRING
HD
From 26 THD CN602
Y
To 24 BOTTOM CN402
COLOR LEVEL
R455
BAL MOD
C SUPRES
C GAIN
BURST MIX
BPF 201
EF Q216
C OUT TP202
COLOR
PHASE SHIFT
BURST GATE
R458
R ENCODER BAL-1
R457
B ENCODER BAL-1
R478
B ENCODER BAL-2
R291
BURST BAL
R456
BURST LEVEL
IC205
PHASE COMP
LPF
SC GEN
VXO
IC211
Q213
Q214
LPA Q213
LPA Q214
R459
BURST PHASE
R479
RED PHASE
From 26 THD CN602
BF
CFM
From 24 BOTTOM CN402

## 4.3 THD BLOCK DIAGRAM


26 THD
EE-Y
CN601
8
IC601
24
CLAMP
AMP
CLIP
MULTIPLIER
V
H
CLAMP
2
20
1
31
VD
19
29
30
28
HD
D601
Q602
VD
H:ON
5V
Q603
BLC
L:ON
R607
IRIS
R650
IRIS FINE
IRIS 2
IRIS 1
IC602
SW1
SW2
SW3
SW4
SW5
2
1
3
4
12
13
15
14
BINARY TO
1-OF-2
DEC WITH
INH
LEVEL CONV
9
10
11
6
IRIS LOCK
IC901
13
12
14
9
10
8
3
2
1
5
6
7
IC902
2
1
4
C.SW OFF
Q901
H:ON
9V
9V
CN612
4
2
3
5
6
1
8
7
OPEN
M
HOLL
IC601
Vref
3
11
13
8
7
12
10
Vref
Vref
5
GAIN
CTL
6
TP601
IRIS DATA OUT
IRIS DATA
14
18
17
R613
HOLL-H
R612
HOLL-L

| | SW1 | SW2 | SW3 | SW4 | SW5 |
|---|---|---|---|---|---|
| NORMAL | OFF | ON | ON | OFF | ON |
| IRIS LOCK | ON | OFF | OFF | ON | OFF |

## 4.4 FAW BLOCK DIAGRAM

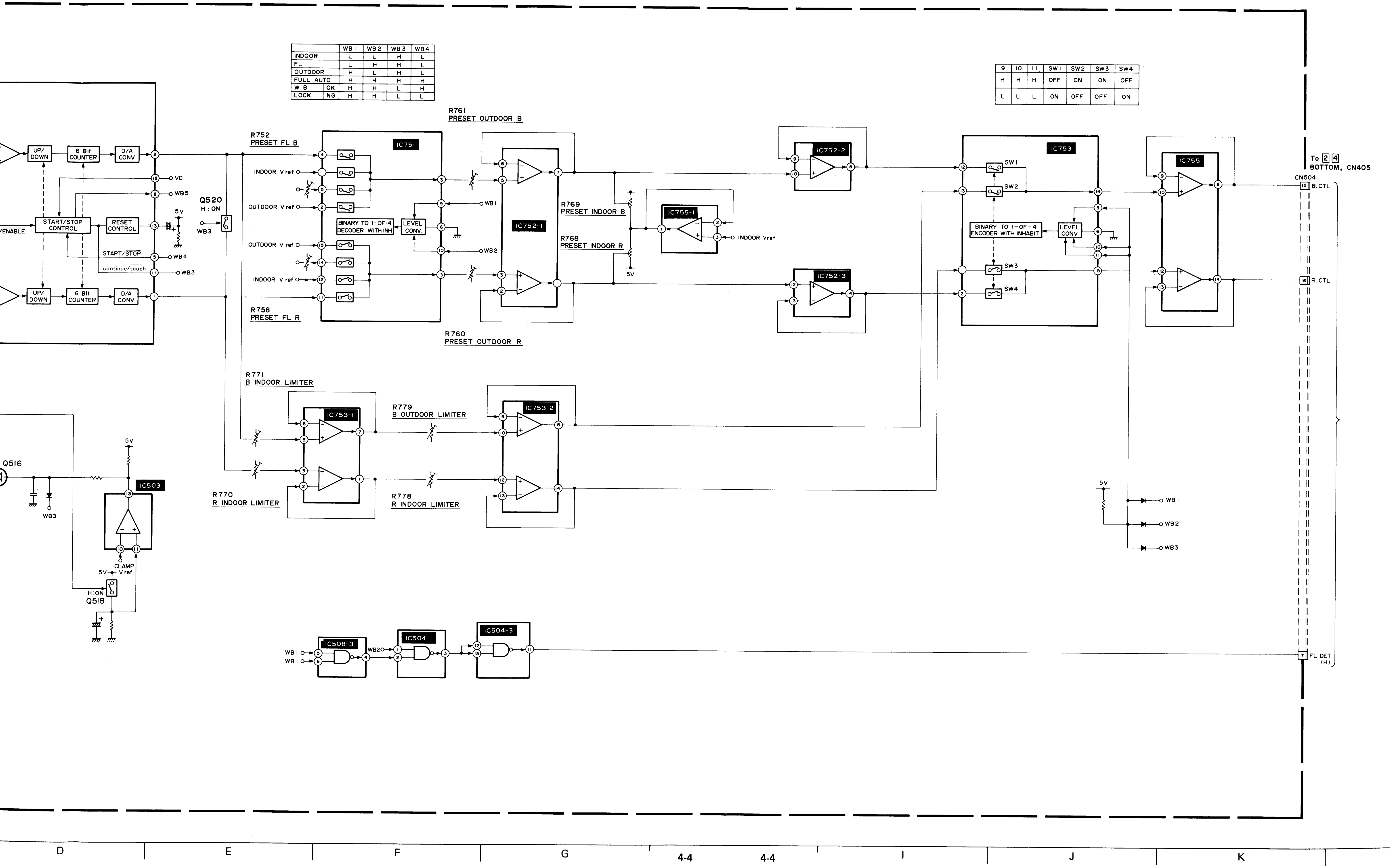


2 5 FAW
From 2 4
BOTTOM, CN405
CN504
B-Y 5
R-Y 6
YL 8
Q501
EF
Q502
Q503
CLAMP
CLAMP Vref
TP501
B-Y
TP502
R-Y
R549
R549
B-Y LEVEL
C.BLK
H:ON
Q511
R550
R550
R-Y LEVEL
5V
Q504
Q505
Q506
IC501
CLAMP
GATE
LPF
R531
C511
R529
R530
C510
C513
R528
C512
UP/DOWN
6 Bit COUNTER
D/A CONV
START/STOP CONTROL
RESET CONTROL
HOLD/ENABLE
START/STOP
continue/touch
VD
WB5
WB4
WB3
ENCP
CLAMP Vref
Q517
L:ON
Q515
L:ON
C.BLK
Q516
IC503
CLAMP Vref
H:ON
Q518
R515
R516
MIX
(R+B-2YL)
Q507
Q508
Q513
EF
IC502-1
(YL)
Q510
Q512
Q509
Q511
IC502-2
(R-YL)
(YL)
(-YL)
(R-YL)
Q520
H:ON
R752
PRESET FL B
IC751
INDOOR Vref
OUTDOOR Vref
BINARY TO 1-OF-4 DECODER WITH INH
LEVEL CONV.
WB1
WB2
R758
PRESET FL R
R761
PRESET OUTDOOR B
R760
PRESET OUTDOOR R
IC752-1
R769
PRESET INDOOR B
R768
PRESET INDOOR R
IC755-1
INDOOR Vref
IC752-2
IC752-3
R771
B INDOOR LIMITER
IC753-1
R770
R INDOOR LIMITER
R779
B OUTDOOR LIMITER
R778
R INDOOR LIMITER
IC753-2
IC508-3
IC504-1
IC504-3
WB1
WB1
WB2

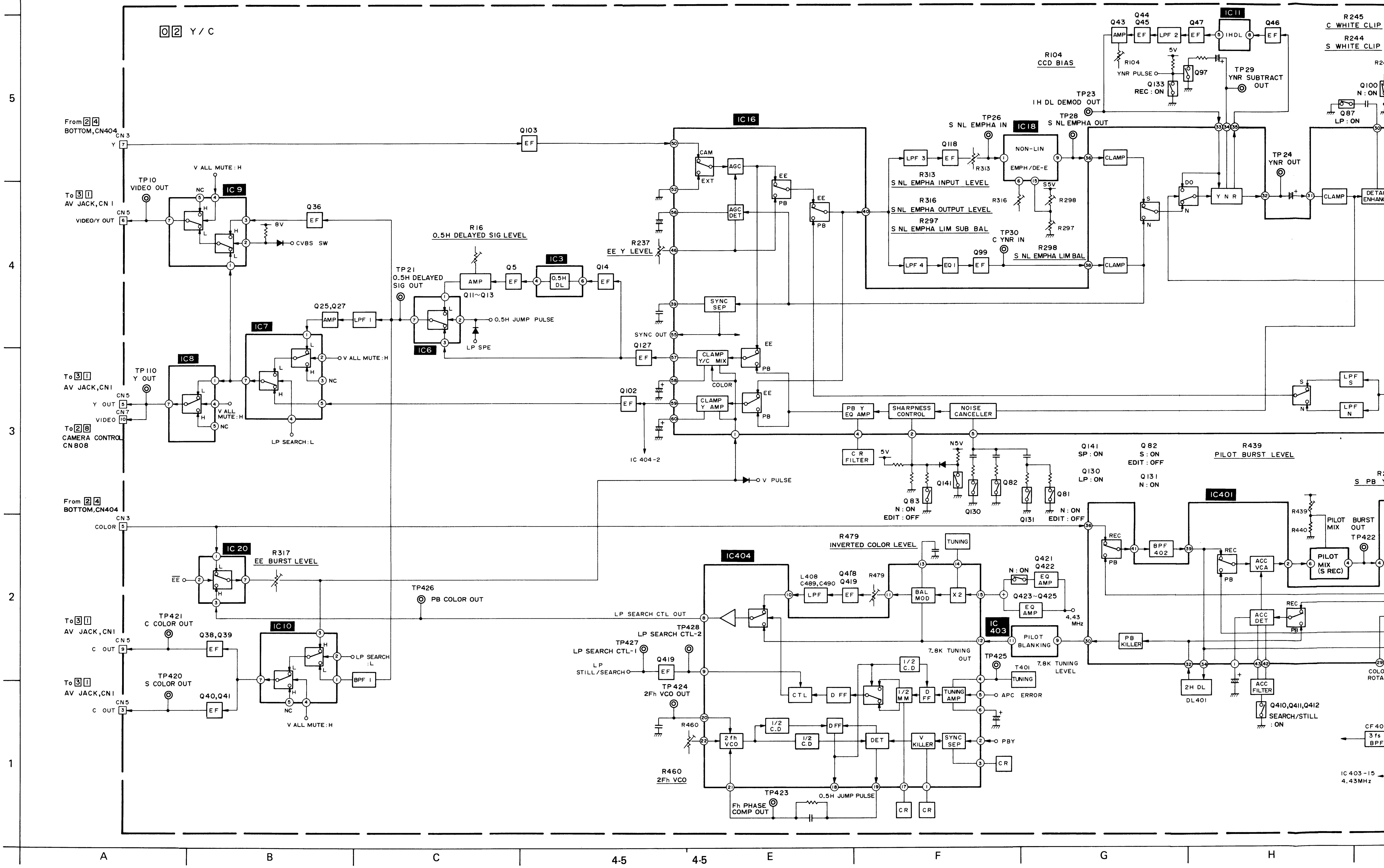
|  |  | WB 1 | WB 2 | WB 3 | WB 4 |
|---|---|---|---|---|---|
| INDOOR |  | L | L | H | L |
| FL |  | L | H | H | L |
| OUTDOOR |  | H | L | H | L |
| FULL AUTO |  | H | H | H | H |
| W. B | OK | H | H | L | H |
| LOCK | NG | H | H | L | L |

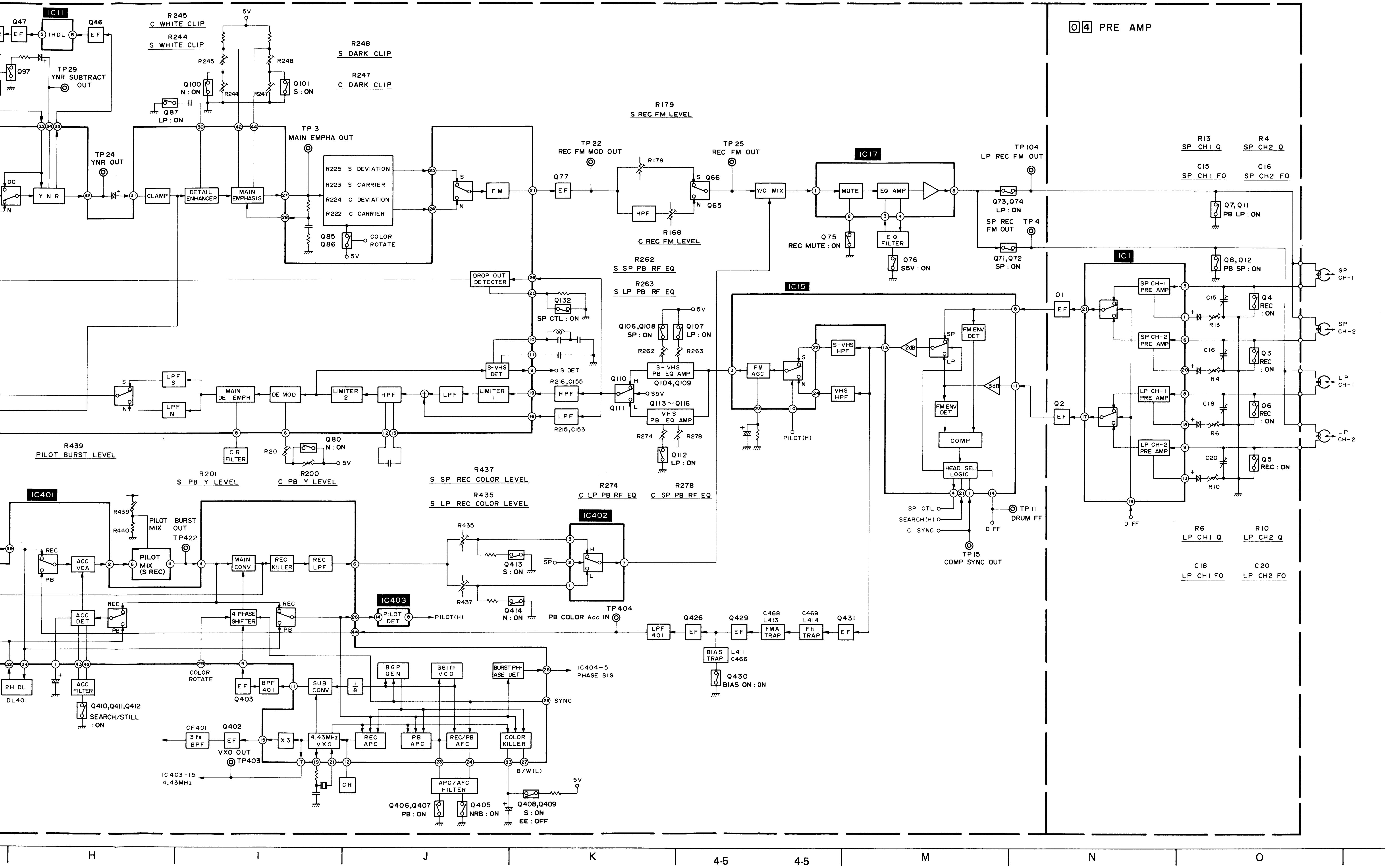
| | | WB 1 | WB 2 | WB 3 | WB 4 |
|---|---|---|---|---|---|
| INDOOR | | L | L | H | L |
| FL | | L | H | H | L |
| OUTDOOR | | H | L | H | L |
| FULL AUTO | | H | H | H | H |
| W. B | OK | H | H | L | H |
| LOCK | NG | H | H | L | L |

| 9 | 10 | 11 | SW1 | SW2 | SW3 | SW4 |
|---|---|---|---|---|---|---|
| H | H | H | OFF | ON | ON | OFF |
| L | L | L | ON | OFF | OFF | ON |


UP/ DOWN
6 Bit COUNTER
D/A CONV
VD
WB5
5V
ENABLE
START/STOP CONTROL
RESET CONTROL
START/STOP
WB4
continue/touch
WB3
Q520
H : ON
WB3
R752
PRESET FL B
IC751
INDOOR V ref
OUTDOOR V ref
BINARY TO 1-OF-4 DECODER WITH INH
LEVEL CONV.
WB 1
WB 2
OUTDOOR V ref
INDOOR V ref
R758
PRESET FL R
R761
PRESET OUTDOOR B
IC752-1
R760
PRESET OUTDOOR R
R769
PRESET INDOOR B
R768
PRESET INDOOR R
5V
IC755-1
INDOOR Vref
IC752-2
IC752-3
IC753
SW 1
SW2
BINARY TO 1-OF-4 ENCODER WITH INHABIT
LEVEL CONV.
SW3
SW4
IC755
To 2 4
BOTTOM, CN405
CN504
15 B. CTL
16 R. CTL
R771
B INDOOR LIMITER
IC753-1
R779
B OUTDOOR LIMITER
IC753-2
R770
R INDOOR LIMITER
R778
R INDOOR LIMITER
Q516
5V
IC503
WB3
CLAMP
5V
V ref
H : ON
Q518
5V
WB 1
WB2
WB3
IC508-3
WB 1
WB 1
IC504-1
WB2
IC504-3
7 FL DET (H)
D
E
F
G
I
J
K

## 4.5 Y/C BLOCK DIAGRAM


02 Y/C
6
5
4
3
2
1
A
B
C
E
F
G
H
From 24 BOTTOM, CN404
CN3
Y 7
To 31 AV JACK, CN1
TP10 VIDEO OUT
CN5
VIDEO/Y OUT 6
V ALL MUTE : H
IC9
NC
H
L
8V
CVBS SW
Q36
EF
To 31 AV JACK, CN1
TP110 Y OUT
CN5
Y OUT 5
CN7
VIDEO 10
To 28 CAMERA CONTROL CN808
IC8
V ALL MUTE : H
NC
IC7
V ALL MUTE : H
LP SEARCH : L
Q25, Q27
AMP
LPF 1
TP21 0.5H DELAYED SIG OUT
IC6
Q11~Q13
0.5H JUMP PULSE
LP SPE
R16 0.5H DELAYED SIG LEVEL
AMP
Q5
EF
IC3
0.5H DL
Q14
EF
Q103
EF
R237 EE Y LEVEL
IC16
CAM
EXT
AGC
AGC DET
EE
PB
SYNC SEP
SYNC OUT
Q127
EF
CLAMP Y/C MIX
COLOR
Q102
EF
CLAMP Y AMP
IC 404-2
V PULSE
From 24 BOTTOM, CN404
CN3
COLOR 5
IC20
EE
R317 EE BURST LEVEL
TP426 PB COLOR OUT
To 31 AV JACK, CN1
TP421 C COLOR OUT
CN5
C OUT 9
Q38, Q39
EF
IC10
LP SEARCH : L
BPF 1
To 31 AV JACK, CN1
TP420 S COLOR OUT
CN5
C OUT 3
Q40, Q41
EF
V ALL MUTE : H
TP26 S NL EMPHA IN
IC18
Q118
LPF 3
EF
R313
NON-LIN EMPH/DE-E
R313 S NL EMPHA INPUT LEVEL
R316 S NL EMPHA OUTPUT LEVEL
R297 S NL EMPHA LIM SUB BAL
R316
S5V
R298
R297
TP30 C YNR IN
Q99
LPF 4
EQ 1
EF
R298 S NL EMPHA LIM BAL
TP28 S NL EMPHA OUT
CLAMP
CLAMP
TP23 1H DL DEMOD OUT
R104 CCD BIAS
Q43
Q44 Q45
Q47
IC11
Q46
AMP
EF
LPF 2
EF
1HDL
EF
R104
YNR PULSE
5V
Q97
Q133 REC : ON
TP29 YNR SUBTRACT OUT
DO
YNR
TP24 YNR OUT
CLAMP
DETAIL ENHANC
R245 C WHITE CLIP
R244 S WHITE CLIP
Q100 N : ON
Q87 LP : ON
PB Y EQ AMP
SHARPNESS CONTROL
NOISE CANCELLER
LPF S
LPF N
CR FILTER
5V
N5V
Q83 N : ON EDIT : OFF
Q141
Q130
Q82
Q131
Q81 N : ON EDIT : OFF
Q141 SP : ON
Q130 LP : ON
Q82 S : ON EDIT : OFF
Q131 N : ON
R439 PILOT BURST LEVEL
S PB Y
IC401
R439
R440
PILOT MIX
BURST OUT
TP422
REC
PB
BPF 402
ACC VCA
PILOT MIX (S REC)
ACC DET
ACC FILTER
PB KILLER
2H DL
DL401
Q410, Q411, Q412 SEARCH/STILL : ON
CF40
3fs BPF
IC 403-15 4.43MHz
COLOR ROTA
R479 INVERTED COLOR LEVEL
TUNING
IC404
L408 C489, C490
Q418 Q419
R479
LPF
EF
BAL MOD
X2
N : ON
Q421 Q422
EQ AMP
Q423~Q425
EQ AMP
4.43 MHz
LP SEARCH CTL OUT
TP428 LP SEARCH CTL-2
TP427 LP SEARCH CTL-1
LP STILL/SEARCH
Q419
EF
TP424 2Fh VCO OUT
R460
R460 2Fh VCO
IC 403
PILOT BLANKING
7.8K TUNING OUT
TP425
T401
TUNING
7.8K TUNING LEVEL
CTL
D FF
1/2 C.D
1/2 MM
D FF
TUNING AMP
APC ERROR
2fh VCO
1/2 C.D
1/2 C.D
D FF
DET
V KILLER
SYNC SEP
PBY
CR
CR
CR
TP423 Fh PHASE COMP OUT
0.5H JUMP PULSE


04 PRE AMP
IC11
Q47
Q46
EF
IHDL
Q97
TP29
YNR SUBTRACT OUT
R245
C WHITE CLIP
R244
S WHITE CLIP
5V
R248
S DARK CLIP
R247
C DARK CLIP
Q100
N : ON
Q101
S : ON
Q87
LP : ON
TP 24
YNR OUT
YNR
DO
CLAMP
DETAIL ENHANCER
MAIN EMPHASIS
TP 3
MAIN EMPHA OUT
R225 S DEVIATION
R223 S CARRIER
R224 C DEVIATION
R222 C CARRIER
Q85
Q86
COLOR ROTATE
FM
Q77
TP 22
REC FM MOD OUT
R179
S REC FM LEVEL
HPF
R168
C REC FM LEVEL
Q66
Q65
TP 25
REC FM OUT
Y/C MIX
IC17
MUTE
EQ AMP
EQ FILTER
Q75
REC MUTE : ON
Q76
S5V : ON
TP 104
LP REC FM OUT
Q73,Q74
LP : ON
SP REC FM OUT
TP 4
Q71,Q72
SP : ON
R13
SP CH1 Q
R4
SP CH2 Q
C15
SP CH1 FO
C16
SP CH2 FO
Q7,Q11
PB LP : ON
Q8,Q12
PB SP : ON
IC1
Q1
Q2
SP CH-1 PRE AMP
SP CH-2 PRE AMP
LP CH-1 PRE AMP
LP CH-2 PRE AMP
Q4 REC : ON
Q3 REC : ON
Q6 REC : ON
Q5 REC : ON
SP CH-1
SP CH-2
LP CH-1
LP CH-2
D FF
R6
LP CH1 Q
R10
LP CH2 Q
C18
LP CH1 FO
C20
LP CH2 FO
DROP OUT DETECTER
Q132
SP CTL : ON
S-VHS DET
S DET
LPF S
LPF N
MAIN DE EMPH
DE MOD
LIMITER 2
LIMITER 1
LPF
HPF
R216,C155
R215,C153
CR FILTER
R201
Q80
N : ON
R262
S SP PB RF EQ
R263
S LP PB RF EQ
Q106,Q108
SP : ON
Q107
LP : ON
Q110
Q111
S5V
S-VHS PB EQ AMP
Q104,Q109
Q113~Q116
VHS PB EQ AMP
R274
R278
Q112
LP : ON
IC15
FM AGC
S-VHS HPF
VHS HPF
12dB
3dB
FM ENV DET
COMP
HEAD SEL LOGIC
PILOT(H)
SP CTL
SEARCH(H)
C SYNC
TP 11
DRUM FF
TP 15
COMP SYNC OUT
R439
PILOT BURST LEVEL
R201
S PB Y LEVEL
R200
C PB Y LEVEL
R437
S SP REC COLOR LEVEL
R435
S LP REC COLOR LEVEL
R274
C LP PB RF EQ
R278
C SP PB RF EQ
IC401
R440
PILOT MIX
BURST OUT
TP422
REC
PB
ACC VCA
PILOT MIX (S REC)
MAIN CONV
REC KILLER
REC LPF
ACC DET
4 PHASE SHIFTER
IC402
Q413
S : ON
Q414
N : ON
IC403
PILOT DET
TP 404
PB COLOR Acc IN
LPF 401
Q426
Q429
C468 L413
FMA TRAP
C469 L414
Fh TRAP
Q431
BIAS TRAP
L411 C466
Q430
BIAS ON : ON
2H DL
DL401
ACC FILTER
Q410,Q411,Q412
SEARCH/STILL : ON
COLOR ROTATE
Q403
BPF 401
SUB CONV
1/8
BGP GEN
361fh VCO
BURST PHASE DET
IC404-5 PHASE SIG
SYNC
CF401
3fs BPF
Q402
VXO OUT
TP403
X3
4.43MHz VXO
REC APC
PB APC
REC/PB AFC
COLOR KILLER
IC 403-15 4.43MHz
CR
APC/AFC FILTER
Q406,Q407
PB : ON
Q405
NRB : ON
Q408,Q409
S : ON
EE : OFF
B/W(L)
H
I
J
K
M
N
O

6

5

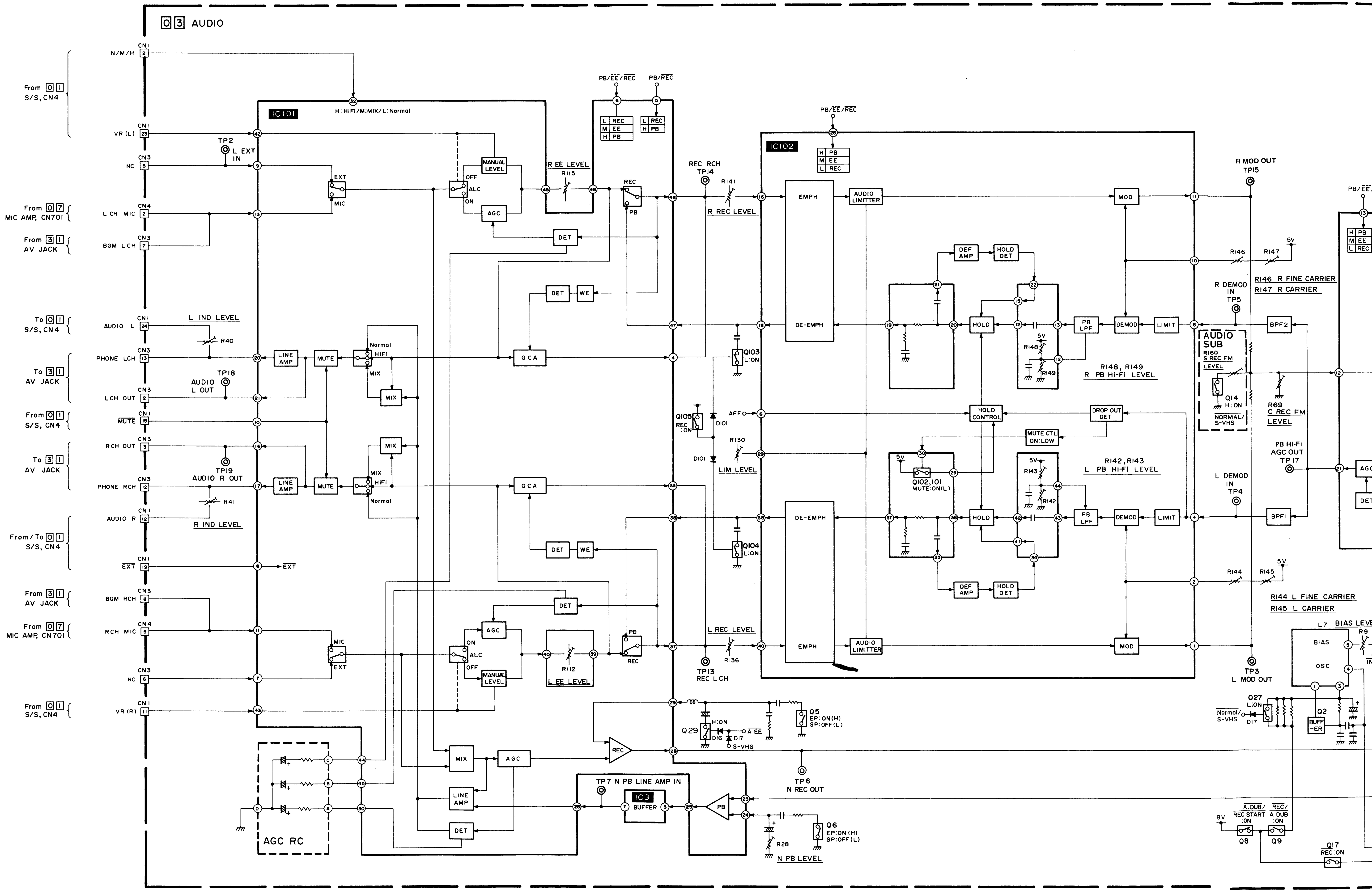
4

3

2

1

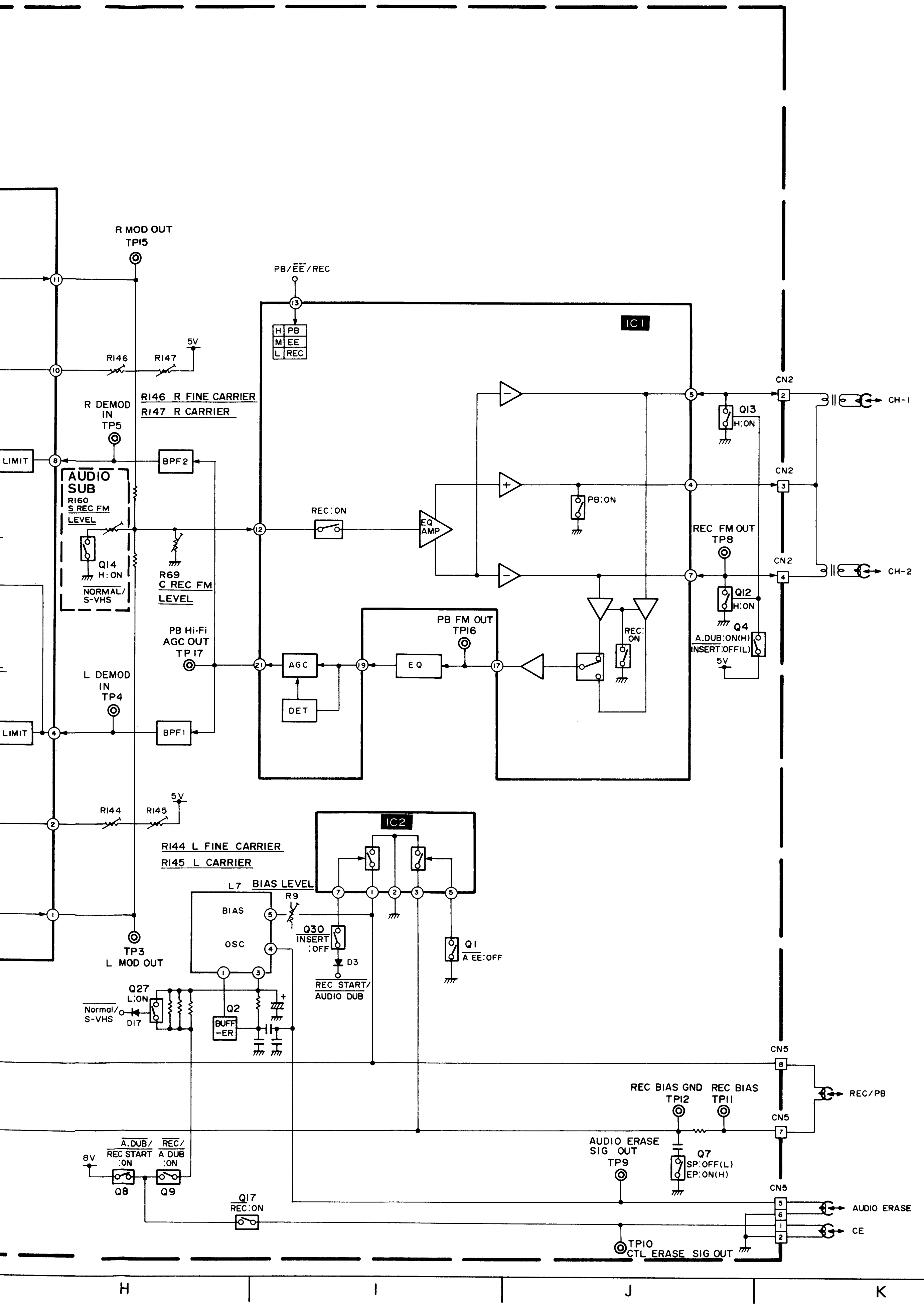
## 4.6 AUDIO BLOCK DIAGRAM



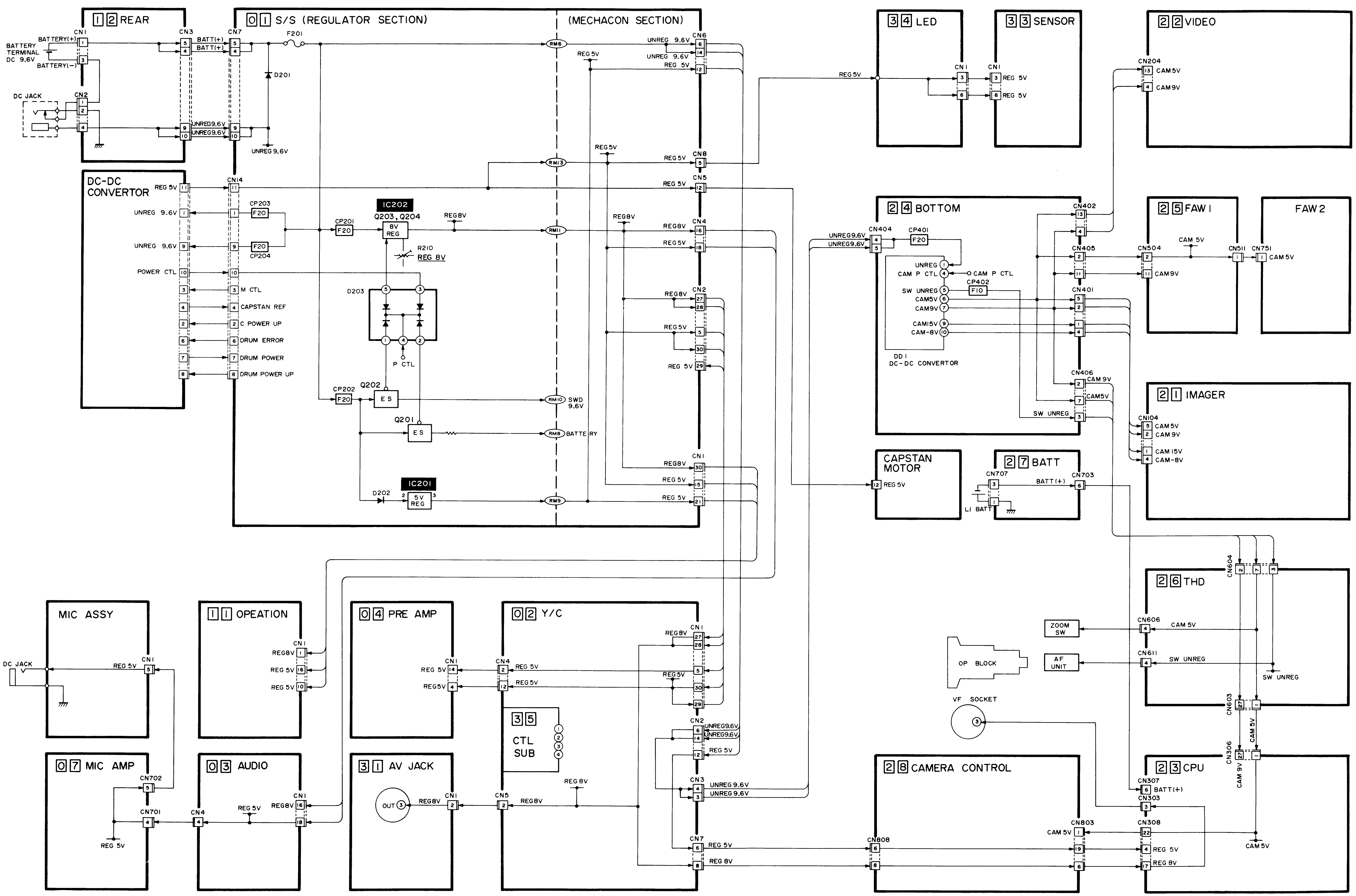
03 AUDIO
From 01 S/S, CN4
N/M/H
VR (L)
CN1
CN3
CN4
NC
From 07 MIC AMP, CN701
L CH MIC
From 31 AV JACK
BGM LCH
To 01 S/S, CN4
AUDIO L
To 31 AV JACK
PHONE LCH
LCH OUT
From 01 S/S, CN4
MUTE
To 31 AV JACK
RCH OUT
PHONE RCH
AUDIO R
From/To 01 S/S, CN4
EXT
From 31 AV JACK
BGM RCH
From 07 MIC AMP, CN701
RCH MIC
NC
From 01 S/S, CN4
VR (R)
TP2
L EXT IN
L IND LEVEL
R40
TP18
AUDIO L OUT
TP19
AUDIO R OUT
R41
R IND LEVEL
IC101
H: HiFi/M: MIX/L: Normal
EXT
MIC
MANUAL LEVEL
OFF
ALC
ON
AGC
DET
WE
GCA
LINE AMP
MUTE
Normal
HiFi
MIX
R EE LEVEL
R115
L EE LEVEL
R112
PB/EE/REC
PB/REC
L REC
M EE
H PB
L REC
H PB
REC
PB
AGC RC
LINE AMP
DET
TP7 N PB LINE AMP IN
IC3
BUFFER
REC RCH
TP14
R141
R REC LEVEL
L REC LEVEL
R136
TP13
REC LCH
Q103
L:ON
Q104
L:ON
Q105
REC :ON
D101
AFF
R130
LIM LEVEL
Q29
H:ON
D16
D17
A EE
S-VHS
Q5
EP:ON(H)
SP:OFF(L)
TP6
N REC OUT
Q6
EP:ON(H)
SP:OFF(L)
R28
N PB LEVEL
IC102
H PB
M EE
L REC
EMPH
DE-EMPH
AUDIO LIMITTER
DEF AMP
HOLD DET
HOLD
HOLD CONTROL
5V
R148
R149
PB LPF
DEMOD
LIMIT
MOD
R148, R149
R PB Hi-Fi LEVEL
DROP OUT DET
MUTE CTL ON:LOW
Q102,101
MUTE:ON(L)
R143
R142
R142, R143
L PB Hi-Fi LEVEL
R MOD OUT
TP15
R146
R147
R146 R FINE CARRIER
R147 R CARRIER
R DEMOD IN
TP5
BPF2
AUDIO SUB
R160
S REC FM LEVEL
Q14
H:ON
NORMAL/S-VHS
R69
C REC FM LEVEL
PB Hi-Fi AGC OUT
TP17
L DEMOD IN
TP4
BPF1
R144
R145
R144 L FINE CARRIER
R145 L CARRIER
TP3
L MOD OUT
L7
BIAS LEVEL
R9
BIAS
OSC
Q27
L:ON
Normal/S-VHS
D17
Q2
BUFF-ER
8V
A.DUB/REC START :ON
REC/A DUB :ON
Q8
Q9
Q17
REC:ON
PB/EE/REC
H PB
M EE
L REC
AGC
DET

A | B | C | 4-6

4-6 | E | F | G | H


R MOD OUT
TP15
PB/EE/REC
IC1
H PB
M EE
L REC
R146
R147
5V
R146 R FINE CARRIER
R147 R CARRIER
R DEMOD IN
TP5
LIMIT
BPF2
AUDIO SUB
R160 S REC FM LEVEL
Q14 H:ON
NORMAL/S-VHS
R69 C REC FM LEVEL
REC:ON
EQ AMP
PB:ON
REC FM OUT
TP8
CN2
CH-1
CH-2
Q13 H:ON
Q12 H:ON
Q4
A.DUB:ON(H)
INSERT:OFF(L)
5V
PB FM OUT
TP16
PB Hi-Fi AGC OUT
TP17
AGC
DET
EQ
REC: ON
L DEMOD IN
TP4
BPF1
R144
R145
5V
R144 L FINE CARRIER
R145 L CARRIER
IC2
L7
BIAS LEVEL
R9
BIAS
OSC
Q30 INSERT :OFF
D3
REC START/AUDIO DUB
Q1 A EE:OFF
TP3
L MOD OUT
Q27 L:ON
Normal/S-VHS
D17
Q2 BUFF-ER
CN5
REC/PB
REC BIAS GND
TP12
REC BIAS
TP11
AUDIO ERASE SIG OUT
TP9
Q7 SP:OFF(L) EP:ON(H)
8V
A.DUB/REC START :ON
REC/A DUB :ON
Q8
Q9
Q17 REC:ON
AUDIO ERASE
CE
TP10 CTL ERASE SIG OUT
H
I
J
K
M
N
O

## 4.7 POWER SYSTEM BLOCK DIAGRAMS

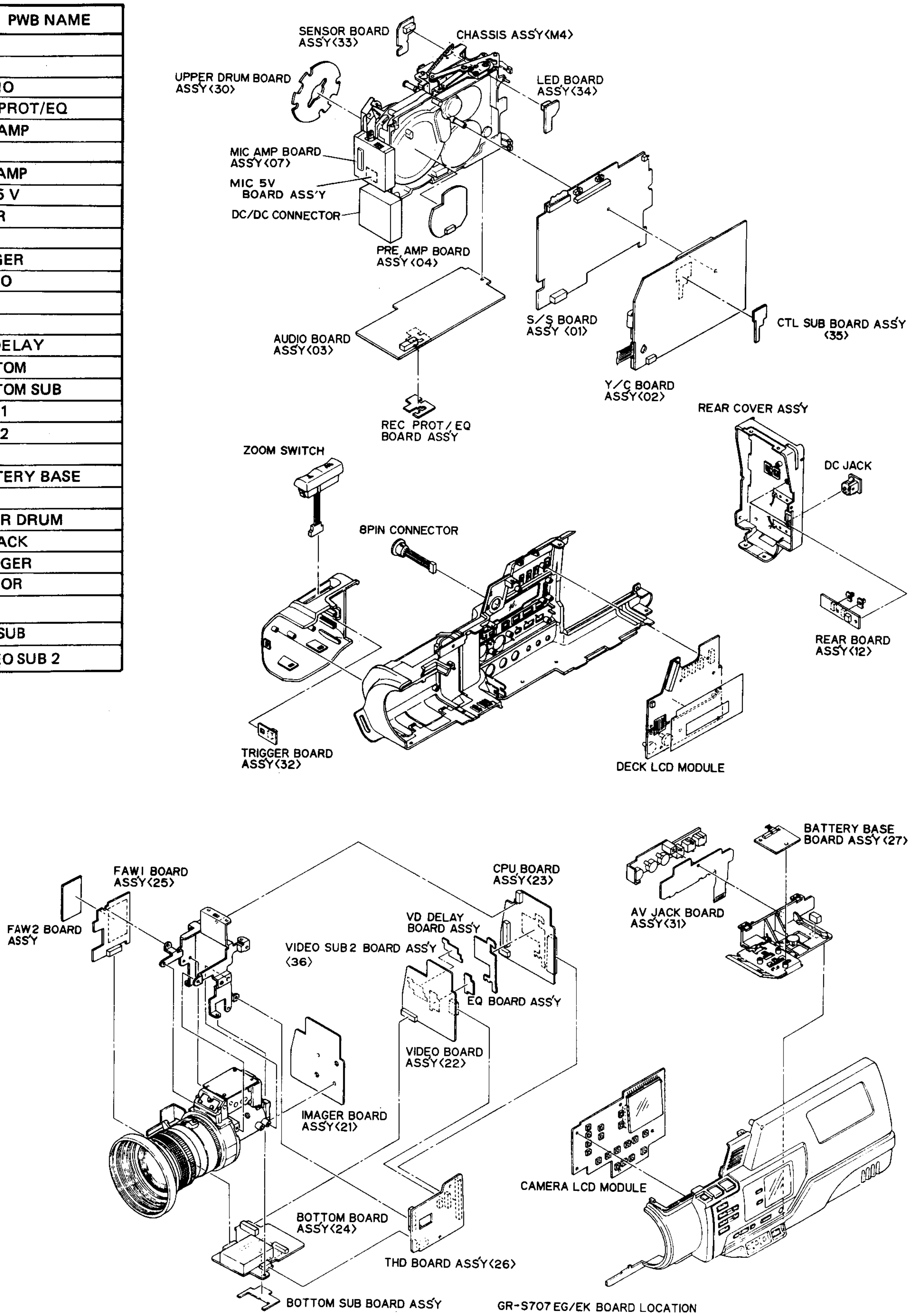


12 REAR
CN1
BATTERY(+)
BATTERY TERMINAL DC 9.6V
BATTERY(−)
DC JACK
CN2
CN3
BATT(+)
UNREG9.6V
01 S/S (REGULATOR SECTION)
(MECHACON SECTION)
CN7
F201
D201
UNREG 9.6V
RM6
UNREG 9.6V
REG 5V
CN6
DC-DC CONVERTOR
REG 5V
UNREG 9.6V
POWER CTL
CN14
CP203
F20
CP204
CP201
IC202
Q203, Q204
8V REG
REG8V
R210
REG 8V
RM13
RM11
CN8
CN5
CN4
CN2
M CTL
CAPSTAN REF
C POWER UP
DRUM ERROR
DRUM POWER
DRUM POWER UP
D203
P CTL
CP202
Q202
ES
RM10
SWD 9.6V
Q201
RM8
BATTERY
IC201
D202
5V REG
RM9
34 LED
33 SENSOR
22 VIDEO
CN204
CAM5V
CAM9V
24 BOTTOM
CN404
CP401
UNREG9.6V
CN402
CN405
CN401
CN406
UNREG
CAM P CTL
CP402
F10
SW UNREG
CAM15V
CAM−8V
DD1
DC-DC CONVERTOR
25 FAW1
FAW2
CN504
CN511
CN751
CAM 5V
21 IMAGER
CN104
CAM 15V
CAPSTAN MOTOR
27 BATT
CN707
CN703
BATT(+)
LI BATT
26 THD
CN604
CN606
ZOOM SW
CN611
AF UNIT
OP BLOCK
VF SOCKET
CN603
CN306
23 CPU
CN307
CN303
CN308
REG 5V
REG 8V
28 CAMERA CONTROL
CN808
CN803
MIC ASSY
11 OPEATION
04 PRE AMP
02 Y/C
35 CTL SUB
07 MIC AMP
CN702
CN701
03 AUDIO
31 AV JACK
OUT
CN3
CN7
A
B
C
E
F
G
H
1
2
3
4
5
6

# SECTION 5
# SCHEMATIC DIAGRAMS AND CIRCUIT BOARDS

## 5.1 CIRCUIT BOARD LOCATION

| No. | PWB NAME |
|---|---|
| 01 | S/S |
| 02 | Y/C |
| 03 | AUDIO |
|  | REC PROT/EQ |
| 04 | PRE AMP |
|  |  |
| 07 | MIC AMP |
|  | MIC 5 V |
| 12 | REAR |
|  |  |
| 21 | IMAGER |
| 22 | VIDEO |
|  | EQ |
| 23 | CPU |
|  | VD DELAY |
| 24 | BOTTOM |
|  | BOTTOM SUB |
| 25 | FAW 1 |
|  | FAW 2 |
| 26 | THD |
| 27 | BATTERY BASE |
|  |  |
| 30 | UPPER DRUM |
| 31 | AV JACK |
| 32 | TRIGGER |
| 33 | SENSOR |
| 34 | LED |
| 35 | CTL SUB |
| 36 | VIDEO SUB 2 |


SENSOR BOARD ASS'Y<33>
CHASSIS ASS'Y<M4>
UPPER DRUM BOARD ASS'Y<30>
LED BOARD ASS'Y<34>
MIC AMP BOARD ASS'Y<07>
MIC 5V BOARD ASS'Y
DC/DC CONNECTOR
PRE AMP BOARD ASS'Y<04>
S/S BOARD ASS'Y <01>
CTL SUB BOARD ASS'Y <35>
AUDIO BOARD ASS'Y<03>
Y/C BOARD ASS'Y<02>
REC PROT/EQ BOARD ASS'Y
REAR COVER ASS'Y
ZOOM SWITCH
DC JACK
8PIN CONNECTOR
REAR BOARD ASS'Y<12>
TRIGGER BOARD ASS'Y<32>
DECK LCD MODULE
BATTERY BASE BOARD ASS'Y<27>
FAW1 BOARD ASS'Y<25>
CPU BOARD ASS'Y<23>
AV JACK BOARD ASS'Y<31>
FAW2 BOARD ASS'Y
VD DELAY BOARD ASS'Y
VIDEO SUB 2 BOARD ASS'Y <36>
EQ BOARD ASS'Y
VIDEO BOARD ASS'Y<22>
IMAGER BOARD ASS'Y<21>
CAMERA LCD MODULE
BOTTOM BOARD ASS'Y<24>
THD BOARD ASS'Y<26>
BOTTOM SUB BOARD ASS'Y

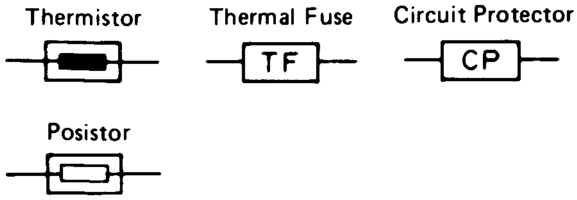
GR-S707 EG/EK BOARD LOCATION

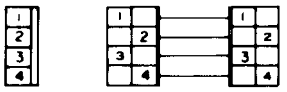
## 5.2 SCHEMATIC DIAGRAM NOTES

1. ▨ parts are safety related parts. When replacing them, be sure to use the specified parts.

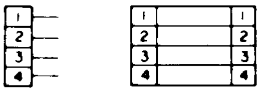
2. Unit indications

| | | |
|---|---|---|
| No units: [Ω] | No units: [μF] | No units : [μH] |
| K: [kΩ] | P: [pF] | m: [mH] |
| M: [MΩ] | | |

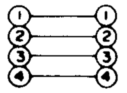

Thermistor
Thermal Fuse
TF
Circuit Protector
CP
Posistor



: Connector



: Board in connector



: Direct connection

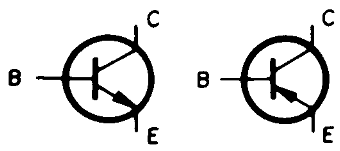
COUNT UP : Active only at high.
$\overline{\text{COUNT DOWN}}$ : Active only at low.

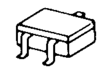
(VS) : Connected pattern in the board.
(MS) Abbreviations
(SM)

| | |
|---|---|
| V : Video | M : Mechacon |
| S : Servo | A : Audio |

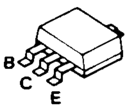
VS : Signal flow from video to servo.

3. Chip transistor

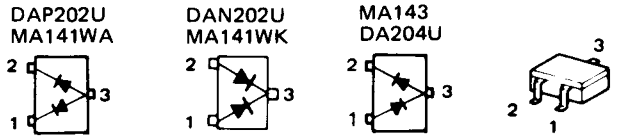




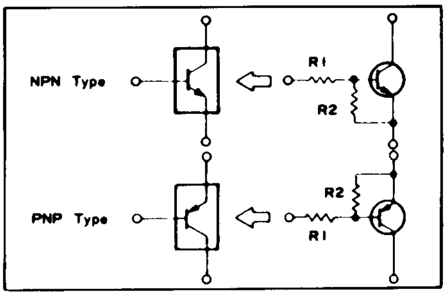
(Standard type)



4. Chip diode


DAP202U
MA141WA
2
1
3
DAN202U
MA141WK
2
1
3
MA143
DA204U
2
1
3
3
2
1

5. Digital transistor


NPN Type
R1
R2
PNP Type
R2
R1

RESISTOR VALUES

| JUNCTION | Part No. | R1 (kΩ) | R2 (kΩ) |
|---|---|---|---|
| PNP | DTA124EU | 22 | 22 |
| NPN | DTC144EU<br>DTC124EU | 47<br>22 | 47<br>22 |

**Note:** The digital transistor includes built in resistors. It features small size and high reliability. Both PNP and NPN types are available.

**USES:** INVERTER, INTERFACE, DRIVER CIRCUITS.

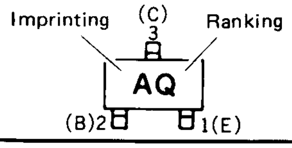
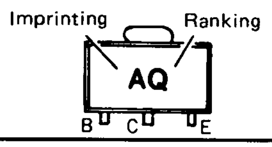
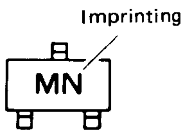
6. Definition of the surface and the back of circuit board diagrams

Front : Side on which discrete parts are assembled
Rear : Side on which chip parts are assembled

## 5.3 REPLACING SUBMINIATURE "CHIP" PARTS

1. Some resistors, shorting jumpers (0 Ω resistance), ceramic capacitors, transistors, and diodes are chip parts. These chip parts cannot be reused after they are once removed.
2. Additional compactness is achieved by using subminiature chip parts for certain circuit elements. When replacing these parts, note the cautions outlined below.
3. Chip transistors and diodes used in this model are outlined bellow.
4. Refer to parts list for correct part numbers.

- **Chip transistor and chip diode imprinting**

| Transistors | | | | Diodes | |
|---|---|---|---|---|---|
| **Type** | **Imprinting** | **Type** | **Imprinting** | **Type** | **Imprinting** |
| DTA114EU | 14 | 2SB1073(PQ) | 1P, 1Q | DAN202K | N |
| DTA124EK | 15 | 2SB1132(QR) | BAQB, BARB | DAN202U | N |
| DTA124EU | 15 | 2SB1218(QR) | AQ, AR | DAP202K | P |
| DTA143ZK | E13 | 2SB4098(PQ) | AP, AQ | DAP202U | P |
| DTA144EK | 16 | 2SB624 | BV1–BV5 | DA204K | K |
| DTA144EU | 16 | 2SB798 | DK–DM | DA204U | K |
| DTC124EK | 25 | 2SC2412K(QR) | BQ, BR | FMN1 | N1 |
| DTC124EU | 25 | 2SC3931(CD) | UC, UD | IMN10 | N10 |
| DTC124TU | 05 | 2SC3936(BC) | KB, KC | MA141A | MA |
| DTC143TU | 03 | 2SC4081 | BQ–BS | MA141WA | MN |
| DTC144EK | 26 | 2SC4097(QR) | CQ, CR | MA141WK | MT |
| DTC144EU | 26 | 2SC4098(PQ) | AP, AQ | MA704 | MIK |
| DTC144WK | 86 | 2SC4116(G) | LG | RD7.5M-T2B2 | 7.52 |
| 2SA1037K(QR) | FQ, FR | 2SC4181 | L17, L18 | | |
| 2SA1502 | HL | 2SD1819 | YR–YS | | |
| 2SA1532(BC) | EB, EC | 2SJ146 | 4D | | |
| 2SA1576 | FQ–FS | UN5216 | 8F | | |
| 2SA1577(PQ) | HP, HQ | | | | |
|  | |  | |  | |

## 5.4 KEY TO ABBREVIATIONS

| | | |
|---|---|---|
| A | AC | : Alternating Current |
| | ACC | : Automatic Color Control |
| | A/CTL | : Audio/Control |
| | ADC | : Analog to Digital Converter |
| | ADD | : Adder |
| | ADJ | : Adjustment |
| | AE | : Audio Erase |
| | AEF | : Automatic Editing Function |
| | **AF** | **: Auto Focus** |
| | AFC | : Automatic Frequency Control |
| | AFT | : Automatic Fine Tuning |
| | AGC | : Automatic Gain Control |
| | AH | : Audio Head |
| | **AL** | **: After Loading, Allways** |
| | ALC | : Automatic Light Compensation<br>Automatic Level Control |
| | ALM | : Alarm |
| | ALU | : Arithmetic Logic Unit |
| | AM | : Amplitude Modulation |
| | AMP | : Amplifier |
| | ANT | : Antenna |
| | APC | : Automatic Pedestal Control<br>Automatic Phase Control |
| | APL | : Average Picture Level |
| | A/S/M | : Audio/Servo/Mechacon |
| | ASS'Y | : Assembly |
| | ATT | : Attenuator |
| | AUD | : Audio |
| | AUTO | : Automatic |
| | AUX | : Auxiliary |
| B | B | : **Base, Blue** |
| | BAL | : Balance |
| | BATT | : Battery |
| | BBD | : Bucket Brigade Device |
| | BCD | : Binary Coded Decimal |
| | BEG | : Beginning |
| | **BF** | **: Behind Focus** |
| | BFP | : Burst Flag Pulse |
| | **BPF** | **: Band Pass Filter** |
| | BIT | : Binary Digit |
| | BLK | : Black, Blanking |
| | BLU | : Blue |
| | BNC | : Bayonet Connector |
| | BOT | : Beginning of Tape |
| | BPF | : Bandpass Filter |
| | BRK | : Brake |
| | BRN | : Brown |
| | BRT | : Brightness |
| | BT | : Band Tuning |
| | BUFF | : Buffer |
| | BW or B/W | : Black and White |
| C | C | : **Capacitance, Collector, Color, Character** |
| | **CA** | **: Camera** |
| | CAL | : Calibration |
| | CAP | : Capstan, Capacitor |
| | CAR | : Carrier |
| | CARR | : Carrier |
| | CASS | : Cassette |
| | CC | : Cassette Compartment |
| | CCD | : Charge Coupled Device |
| | CCT | : Circuit |
| | CdS | : Cadmium Sulphide |
| | CD | : Count Down |
| | CE | : Chip Enable |
| | CF | : **Ceramic Filter, Color Frame, Correct Focus** |
| | CH | : Channel |
| | CHG | : Charge |
| | CHROMA | : Chrominance |
| | CLK | : Clock |
| | CLR | : Clear |
| | CMD | : Command |
| | CMOS | : Complementary Metal Oxide Semiconductor |
| | CNT | : Count, Counter |
| | COL | : Color |
| | COM | : Common |
| | COMB | : Combination<br>Comb Filter |
| | COMP | : Comparator<br>Composite<br>Compensation |
| | CONN | : Connector |
| | CONV | : Converter |
| | CP | : Circuit Protector<br>Clamp Pulse |
| | CPC | : Capstan Phase Control |
| | CPU | : Central Processing Unit |
| | CTC | : Crosstalk Cancel |
| | CTL | : Control |
| D | D | : Drum, Digital, Diode, Drain |
| | DAC | : Digital to Analog Converter |
| | dB | : Decibel |
| | DC | : Direct Current |
| | DD | : Direct Drive |
| | DEC | : Decoder |
| | DEMOD | : Demodulator |
| | DEMUX | : Demultiplexer |
| | DET | : Detector |
| | DEV | : Deviation |
| | DFRS | : Drum Free Running Stop |
| | DG | : Differential Gain |
| | DIF | : Differential |
| | DISCR | : Discriminator |
| | DL | : Delay Line |
| | DOC | : Dropout Compensator |
| | DOD | : Drop Out Detector |
| | DP | : Differential Phase |
| | DPC | : Drum Phase Control |
| | DYAC | : Dynamic Aperture Control |
| E | E | : Edit, Emitter |
| | EDP | : Electronic Data Processing |
| | E-E | : Electric to Electric |
| | EF | : Emitter-Follower |
| | EMP | : Emphasis |
| | EN | : Enable |
| | ENC | : Encoder |
| | ENV | : Envelope |
| | EOT | : End of Tape |
| | EP | : Extended Play |
| | EQ | : Equalizer |
| | ES | : Electronic Switch |
| | ESNS | : End Sensor |
| | EXP | : Expander |
| | EXT | : External |
| F | F | : Farad, Fuse |
| | F ADV | : Frame Advance |
| | FDP | : Fluorescent Display Panel |
| | FE | : Full Erase |
| | FET | : Field Effect Transistor |
| | FF | : **Fast Forward, Front Focus**<br>Flipflop |
| | FG | : Frequency Generator |
| | FM | : Frequency Modulation |
| | FR | : Full Recording, Frame, Fusible Resistor |
| | FREQ | : Frequency |
| | F-V CONV | : Frequency to Voltage Converter |
| | FWD | : Forward |
| | FWD S | : Forward Search |
| G | G | : Green, Gate, Grid |
| | GEN | : Generator |
| | GND | : Ground |
| | GRN | : Green |
| | GRY | : Gray |
| H | H | : High, Henry, Hour |
| | HBF | : Horizontal Burst Flag |
| | HD | : Horizontal Drive |
| | HPF | : Highpass Filter |
| | Hz | : Herz |

**I**

IC : Integrated Circuit
ID : Identification (Pulse)
IF : Intermediate Frequency
IFR : Infrared
IFT : Intermediate Frequency Transformer
IND : Indicator
INH : Inhibit
INS : Insert
INT : Internal, Interrupt
INV : Inverter, Interleave
I/O : Input/Output
IR : Infrared

**L**

L : Low, Left
LCD : Liquid Crystal Display
LED : Light Emitting Diode
LIM : Limiter
LIN : Linearity
LLD : Low Light Detector
LOAD : Loading (Cassette)
LP : Long Play
LPF : Lowpass Filter
LSB : Lower Sideband

**M**

M : Motor, Mega
MAX : Maximum
MDA : Motor Drive Amplifier
MECHACON : Mechanism Control
MIC : Microphone
MIN : Minimum
MIX : Mixer, Mixing
MMV : Monostable Multivibrator
MNOS : Metal Nitride Oxide Semiconductor
MOD : Modulation, Modulator
MODEM : Modulator-Demodulator
MON : Monitor
MOS : Metal Oxide Semiconductor
MPX : Multiplexer, Multiplex
MS : Mode Select
MUT : Muting

**N**

NAND : Not And
NC : Not Connected, Normally Closed
NFB : Negative Feedback
NLN : Non-Linear
NO : Normally Open
NOR : Normal, Not-Or
NR : Noise Reduction

**O**

OP : Operation
OPAMP : Operational Amplifier
ORG : Orange
OSC : Oscillator

**P**

PB : Playback
PC : Photocoupler, Pulse Counter
PCM : Pulse Code Modulation
PG : Pulse Generator
PGM : Program
PI : Photo Interrupter
PIC : Picture Control
PIF : Picture Intermediate Frequency
PLA : Programmable Logic Array
PLL : Phase Locked Loop
PNK : Pink
POS : Position
p-p : Peak-to-Peak
PR : Pinch Roller
PREAMP : Preamplifier
PRL : Preroll
P/S : Pause/Still
PSC : Pulse Swallowing Control
PU : Pickup
PUT : Programmable Unijunction Transistor
PWB : Printed Wiring Board
PWM : Pulse Width Modulation
PWR : Power

**Q**

Q : Quality Factor

**R**

R : Red, Right
RA : Resistor Array
RAM : Random Access Memory
REC : Recording
REF : Reference
REG : Regulated, Regulator
REM : Remote
REMOCON : Remote Control (Unit)
REV : Reverse
REV S : Reverse Search
REW : Rewind
RF : Radio Frequency
ROM : Read Only Memory
R/P : Record/Playback
RPT : Repeat
RS FF : RS Flipflop
RST : Reset
RT : Rotary Transformer
RUN : Running
RY : Relay

**S**

SAW : Sawtooth, Surface Acoustic Wave
SC : Subcarrier, Simulcast
SCH : Search
SEL : Select, Selector
SENS : Sensor
SEP : Separator
SF : Source Follower
SFF : Short Fast Forward
SIF : Sound Intermediate Frequency
SN : Signal to Noise Ratio
SOL : Solenoid
SOS : Sound on Sound
SP : Standard Play
SR : Supply Reel
SREW : Short Rewind
S/S : Slow/Still
SSG : Sync Signal Generator
SSNS : Start Sensor
STD : Strobe Data, Standard
SUP : Supply
SW : Switch
SWD : Switched
SYNC : Synchronization

**T**

TAL : Tally
TBC : Time Base Corrector
TC : Tension Control, Time Code
TEN : Tension
TF : Thermal Fuse
TIM : Timing
TK : Tracking
TNR : Tuner
TP : Test Point
TPZD : Trapezoid
TR : Transistor, Trimmer
TRANS : Transformer
TU : Take-up

**U**

UL : Unloading
UNREG : Unregulated
UNSW : Unswitched

**V**

V : Vertical, Volt
VACT : Video Action
VCO : Voltage Controlled Oscillator
VD : Vertical Drive
VIF : Video Intermediate Frequency
VLT : Violet
VR : Variable Resistor
VS : Video and Sync
VSCH : Variable Search
VV : Video to Video
VXO : Variable Crystal Oscillator

**W**

W : Watt
WARN : Warning
W & D : White and Dark
WHT : White
WV : Working Voltage

**X**

XTAL : Crystal

**Y**

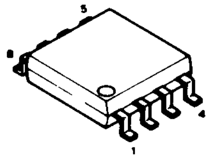
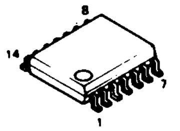
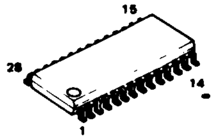
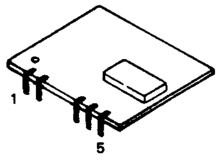
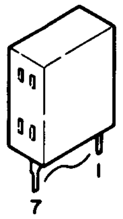
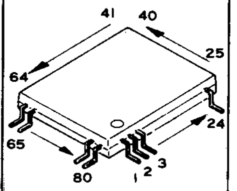
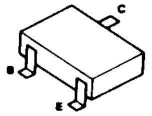
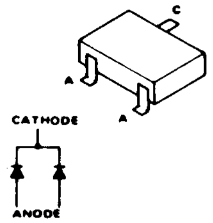
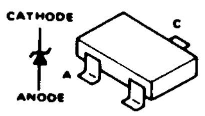
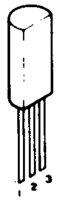
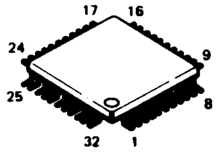
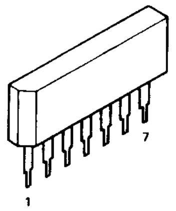
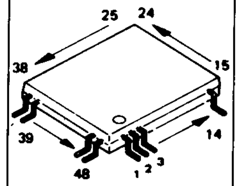
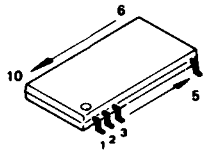
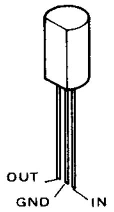
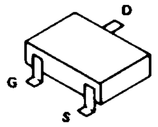
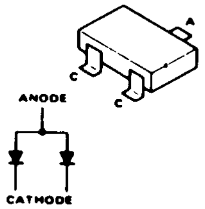
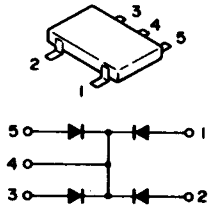
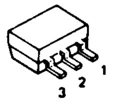
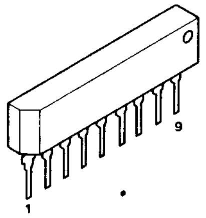
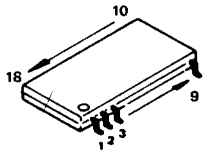
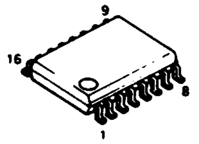
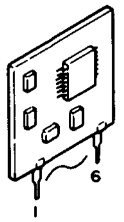
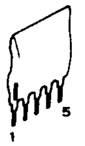
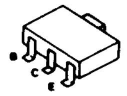
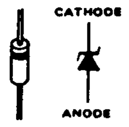
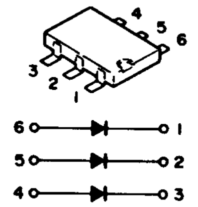
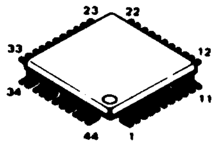
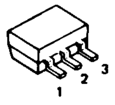
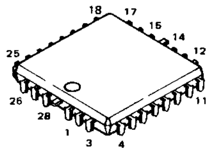
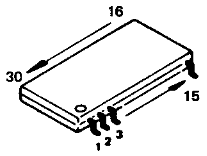
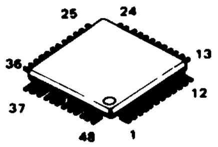
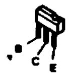
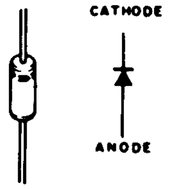
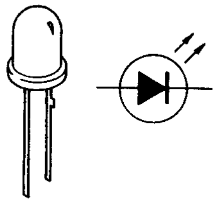
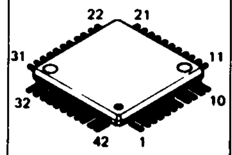
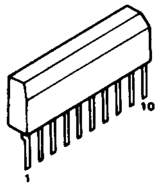
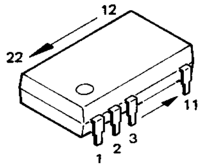
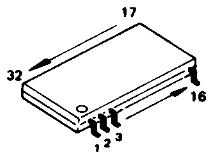
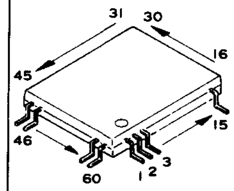
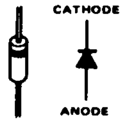
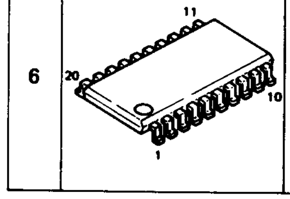
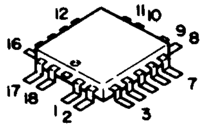
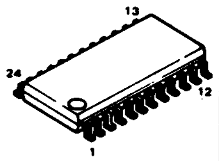
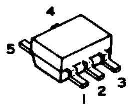
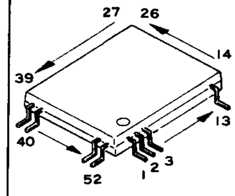
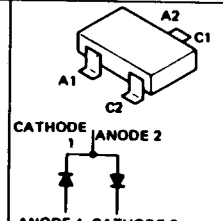
Y : Luminance
YEL : Yellow

## 5.5 SEMICONDUCTOR SHAPES

| | NAME | L |
|---|---|---|
| IC | | |
| A | AFZ72F30A5 | 1D |
| | AN2276S | 5D |
| | AN2510S | 6C |
| | AN2570FA | 2B |
| | AN3380NK | 5C |
| | AN3931NC | 4A |
| | AN3977C | 4E |
| | AN6308S | 1A |
| | AN6392 | 3B |
| | AN78L08-TA | 2F |
| B | BA10324F | 1B |
| | BA10339F | 1B |
| | BA10358F | 1B |
| | BA10393F | 1B |
| | BA7131F | 1A |
| | BU4001BF | 1B |
| | BU4011BF | 1B |
| | BU4052BF | 3D |
| | BU4053BF | 3D |
| | BU4081BF | 3D |
| H | HA11899MP | 4C |
| | H8D7091B | 3E |
| I | IR3F01N | 1A |
| M | MC8180B | 1E |
| | MN3106S | 1A |
| | MN3801S | 3C |
| | MSM6830M3 | 6A |
| | MSM6984MS | 1A |
| | M37100M8-398FP | 1F |
| | M37405E5 | 1F |
| | M37450M2-152FP | 1F |
| | M51798FP | 1B |
| | M52074FP | 5E |
| | M5236ML | 3A |
| | M5282FP | 1A |
| | M54543ASL | 5B |
| | M54641FP | 2E |
| N | NJM2904E | 1A |
| | NJM3404AM | 1A |
| | NJM431U | 4B |
| S | S-3500A2 | 1B |
| | S-8053AN0 | 2A |
| | S-8054HN | 4B |
| | S-81215AG | 4B |
| | S-81252HG | 2A |
| T | TA7361AP | 2C |
| | TA8609F | 1C |
| | TA8644F | 4D |
| | TA8733F | 6C |
| | TC4S66F | 6D |
| | TC4S69F | 6D |
| | TC4S71F | 6D |
| | TC4S81F | 6D |
| | TC7S04F | 6D |
| | TC74HC04AF | 1B |
| | TC74HC14AF | 1B |

| | NAME | L |
|---|---|---|
| U | UPC2370GH | 2D |
| | UPC2371GH | 2D |
| | UPC324G2 | 1B |
| | UPC358G2 | 1A |
| | UPC393G2 | 1A |
| | UPD4011BG | 1B |
| | UPD4053BG | 3D |
| | UPD6147G | 6A |
| | UPD6148GS | 6C |
| | UPD9319CGC | 6E |
| V | VC2031MP | 6B |
| | VC2057 | 4D |
| | VC2095 | 6A |
| | VC5026G | 6A |
| 5V | 5VT16 | 3F |
| TRANSISTOR | | |
| D | DTA114EU | 1G |
| | DTA124EK | 1G |
| | DTA124ES | 1G |
| | DTA124EU | 1G |
| | DTA143ZK | 1G |
| | DTA144EK | 1G |
| | DTA144EU | 1G |
| | DTC124EK | 1G |
| | DTC124EU | 1G |
| | DTC124TU | 1G |
| | DTC143TU | 1G |
| | DTC144EK | 1G |
| | DTC144ES | 4G |
| | DTC144EU | 1G |
| | DTC144WK | 1G |
| U | UN5216 | 1G |
| 2SA | 2SA1037K | 1G |
| | 2SA1502 | 1G |
| | 2SA1532 | 1G |
| | 2SA1576 | 1G |
| | 2SA1577 | 1G |
| 2SB | 2SB1073 | 4G |
| | 2SB1132 | 4G |
| | 2SB1218 | 1G |
| | 2SB2412K | 1G |
| | 2SB624 | 1G |
| | 2SB766 | 3G |
| | 2SB798 | 3G |
| 2SC | 2SC2412K | 1G |
| | 2SC3931 | 1G |
| | 2SC3936 | 1G |
| | 2SC4081 | 1G |
| | 2SC4097 | 1G |
| | 2SC4098 | 1G |
| | 2SC4181 | 1G |
| 2SD | 2SD1819 | 1G |
| 2SJ | 2SJ146 | 2G |

| | NAME | L |
|---|---|---|
| DIODE | | |
| D | DAN202K | 1H |
| | DAN202U | 1H |
| | DAP202K | 2H |
| | DAP202U | 2H |
| | DA204K | 6H |
| | DA204U | 6H |
| | DC010 | 1H |
| E | ERA15-06 | 5H |
| | ERA81-004 | 4H |
| | ERA82-004 | 5H |
| | ESJA04-02 | 5H |
| F | FMN1 | 2I |
| I | IMN10 | 3I |
| M | MA141A | 5H |
| | MA141WA | 2H |
| | MA141WK | 1H |
| | MA152WK | 1H |
| | MA157A | 6H |
| | MA704 | 5H |
| R | RD20EB2 | 3H |
| | RD7.5M-T2B2 | 1I |
| | RD8.2EBS | 3H |
| L | LN28CAL | 4I |
| | ISS133 | 5H |

|  | IC |  |  |  |  |  | TRANSISTOR | DIODE |  |
|---|---|---|---|---|---|---|---|---|---|
|  | A | B | C | D | E | F | G | H | I |
| 1 |  |  |  |  |  |  41<br>40<br>64<br>25<br>24<br>65<br>80<br>1<br>2<br>3 |  |  C<br>A<br>A<br>CATHODE<br>ANODE |  CATHODE<br>C<br>A<br>ANODE |
| 2 |  |  17<br>16<br>24<br>9<br>25<br>8<br>32<br>1 |  |  25<br>24<br>38<br>15<br>39<br>14<br>48<br>1<br>2<br>3 |  |  |  |  A<br>ANODE<br>C<br>C<br>CATHODE |  3<br>4<br>5<br>2<br>1<br>5<br>1<br>4<br>3<br>2 |
| 3 |  |  |  |  |  |  |  |  CATHODE<br>ANODE |  4<br>5<br>6<br>3<br>2<br>1<br>6<br>1<br>5<br>2<br>4<br>3 |
| 4 |  23<br>22<br>33<br>12<br>34<br>11<br>44<br>1 |  |  18<br>17<br>15<br>14<br>12<br>25<br>11<br>26<br>28<br>1<br>3<br>4 |  |  25<br>24<br>36<br>13<br>37<br>12<br>48<br>1 |  |  |  CATHODE<br>ANODE |  |
| 5 |  22<br>21<br>31<br>11<br>32<br>10<br>42<br>1 |  |  |  |  31<br>30<br>45<br>16<br>46<br>15<br>60<br>1<br>2<br>3 |  |  |  CATHODE<br>ANODE |  |
| 6 |  |  12<br>11<br>10<br>9<br>8<br>16<br>7<br>17<br>18<br>1<br>2<br>3 |  |  |  27<br>26<br>39<br>14<br>40<br>13<br>52<br>1<br>2<br>3 |  |  |  A2<br>C1<br>A1<br>C2<br>CATHODE 1<br>ANODE 2<br>ANODE 1<br>CATHODE 2 |  |

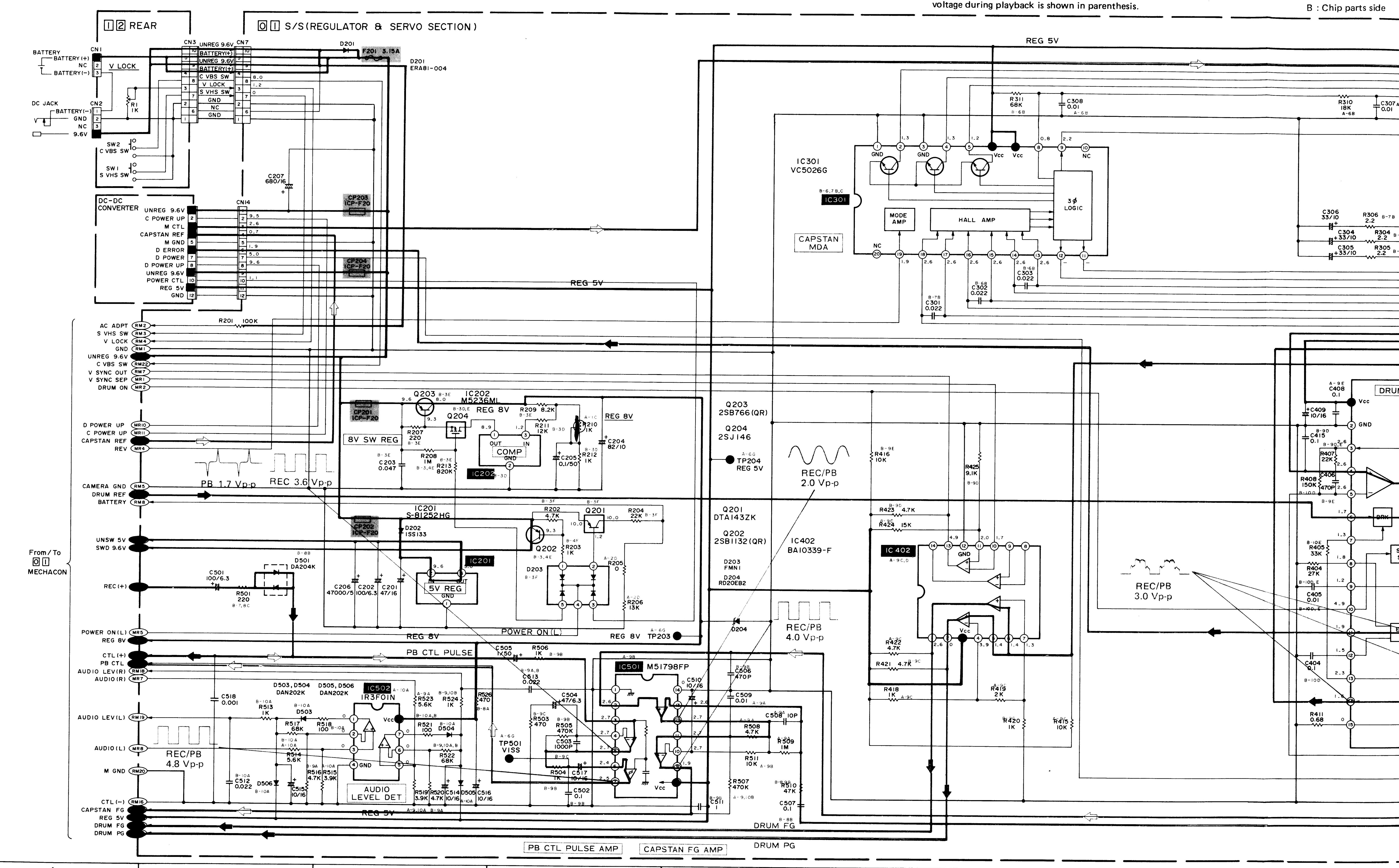
5-7

## 5.6 REGULATOR , SERVO & REAR SCHEMATIC DIAGRAMS

- Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

- Voltage
  REC : Y/C separator input, color bar SP mode, VHS mode.
  PB : Alignment tape, color bar SP mode, VHS mode.
  *Where voltage differ between recording and palyback, the voltage during playback is shown in parenthesis.

- Address of chip parts
  A-1D
  └Address
  A : Discrete parts side
  B : Chip parts side


6
5
4
3
2
1
1 2 REAR
0 1 S/S(REGULATOR & SERVO SECTION)
BATTERY
BATTERY(+)
NC
BATTERY(−)
CN1
V LOCK
DC JACK
CN2
GND
9.6V
R1 1K
SW2 C VBS SW
SW1 S VHS SW
CN3
CN7
UNREG 9.6V
BATTERY(+)
C VBS SW
V LOCK
S VHS SW
GND
NC
D201
F201 3.15A
D201 ERA81-004
C207 680/16
DC-DC CONVERTER
CN14
C POWER UP
M CTL
CAPSTAN REF
M GND
D ERROR
D POWER
D POWER UP
POWER CTL
REG 5V
CP203 ICP-F20
CP204 ICP-F20
R201 100K
AC ADPT
DRUM ON
V SYNC OUT
V SYNC SEP
From/To 0 1 MECHACON
Q203
IC202 M5236ML
REG 8V
Q204
8V SW REG
COMP
CP201 ICP-F20
R207 220
R208 1M
R213 820K
C203 0.047
R209 8.2K
R211 12K
R210 1K
R212 1K
C205 0.1/50
C204 82/10
PB 1.7 Vp-p
REC 3.6 Vp-p
CAMERA GND
DRUM REF
IC201 S-81252HG
CP202 ICP-F20
D202 1SS133
Q201
Q202
R202 4.7K
R203 1K
R204 22K
R205 0
R206 13K
D203
5V REG
C206 47000/5
C202 100/6.3
C201 47/16
UNSW 5V
SWD 9.6V
C501 100/6.3
D501 DA204K
R501 220
REC(+)
POWER ON(L)
POWER ON (L)
REG 8V
TP203
CTL(+)
PB CTL
PB CTL PULSE
AUDIO LEV(R)
AUDIO(R)
AUDIO LEV(L)
AUDIO(L)
REC/PB 4.8 Vp-p
M GND
CTL(−)
CAPSTAN FG
DRUM FG
DRUM PG
C518 0.001
C512 0.022
D503, D504 DAN202K
D505, D506 DAN202K
IC502 IR3F01N
AUDIO LEVEL DET
R513 1K
R517 68K
R518 100
R514 5.6K
R516 4.7K
R515 3.9K
R519 3.9K
R520 4.7K
C514 10/16
C515 10/16
C516 10/16
R521 100
R522 68K
R523 5.6K
R524 1K
R526 470
C505 1X50
R506 1K
C513 0.022
TP501 VISS
IC501 M51798FP
C504 47/6.3
R503 470
R505 470K
C503 1000P
R504 1K
C517 10/16
C502 0.1
C510 10/16
C506 470P
C509 0.01
C508 10P
R508 4.7K
R509 1M
R511 10K
R507 470K
R510 47K
C507 0.1
C511 1
PB CTL PULSE AMP
CAPSTAN FG AMP
Q203 2SB766(QR)
Q204 2SJ146
TP204 REG 5V
REC/PB 2.0 Vp-p
Q201 DTA143ZK
Q202 2SB1132(QR)
D203 FMN1
D204 RD20EB2
IC402 BA10339-F
REC/PB 4.0 Vp-p
REG 5V
IC301 VC5026G
CAPSTAN MDA
MODE AMP
HALL AMP
3φ LOGIC
R311 68K
C308 0.01
C301 0.022
C302 0.022
C303 0.022
R416 10K
R425 9.1K
R423 4.7K
R424 15K
R422 4.7K
R421 4.7K
R418 1K
R419 2K
R420 1K
R415 10K
REC/PB 3.0 Vp-p
R310 18K
C307 0.01
C306 33/10
C304 33/10
C305 33/10
R306 2.2
R304 2.2
R305 2.2
C408 0.1
C409 10/16
C415 0.1
R407 22K
C406 470P
R408 150K
R405 33K
R404 27K
C405 0.01
C404 0.1
R411 0.68
DRUM
A
B
C
D
E
F
G

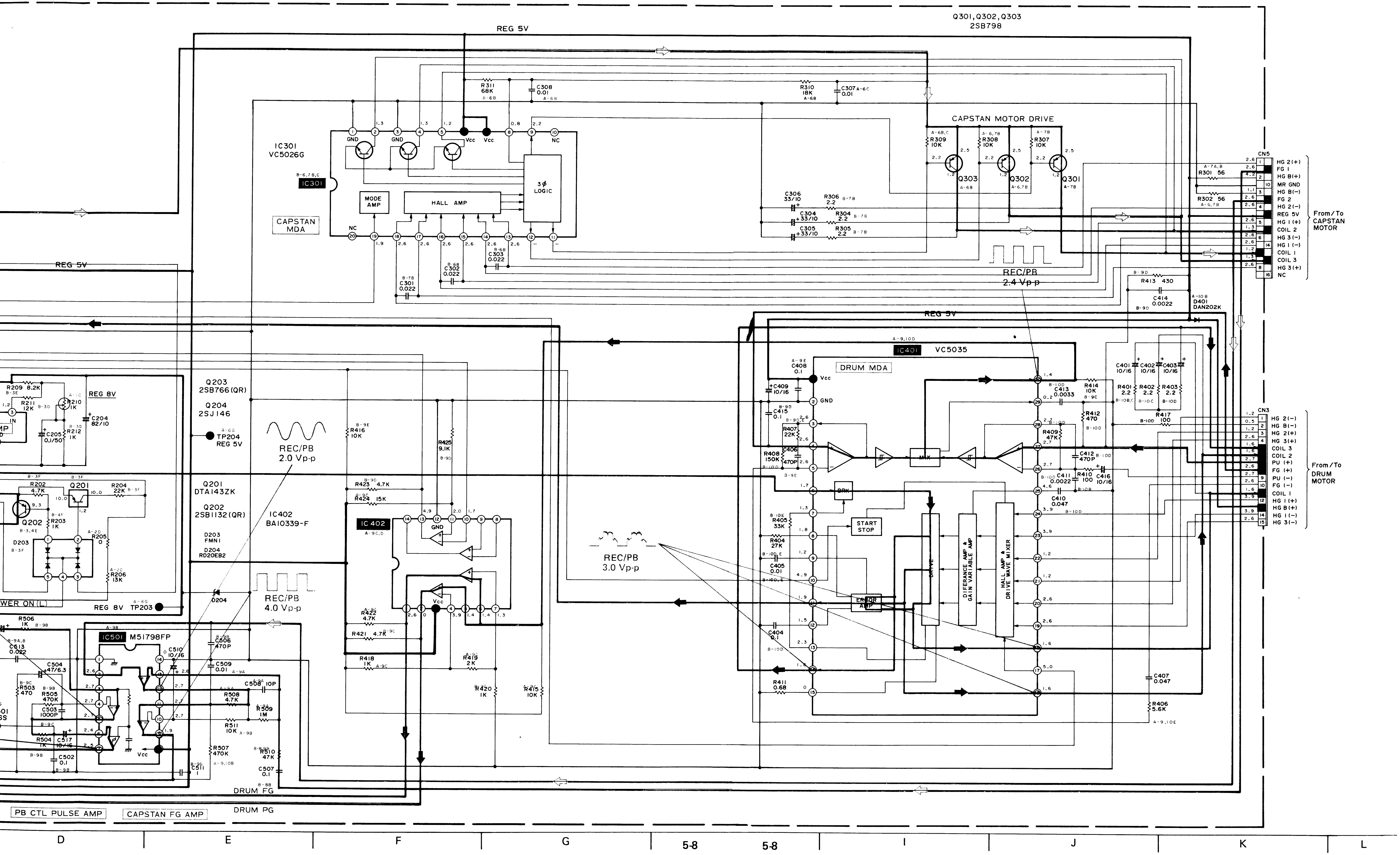
- Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

- Voltage
  REC : Y/C separator input, color bar SP mode, VHS mode.
  PB : Alignment tape, color bar SP mode, VHS mode.
  *Where voltage differ between recording and palyback, the voltage during playback is shown in parenthesis.

- Address of chip parts
  A-1D
  —Address
  —A : Discrete parts side
  B : Chip parts side

- SIGNAL PATH
  ← DRUM SERVO
  ⇦ CAPSTAN SERVO

- Waveform
  REC : Y/C separator input, color bar SP mode, VHS mode.
  PB : Alignment tape, color bar SP mode, VHS mode.



Q301,Q302,Q303
2SB798
REG 5V
R311 68K
C308 0.01
R310 18K
C307 0.01
IC301
VC5026G
IC301
CAPSTAN MDA
MODE AMP
HALL AMP
3φ LOGIC
GND
Vcc
NC
C306 33/10
R306 2.2
C304 33/10
R304 2.2
C305 33/10
R305 2.2
C303 0.022
C302 0.022
C301 0.022
CAPSTAN MOTOR DRIVE
R309 10K
R308 10K
R307 10K
Q303
Q302
Q301
R301 56
R302 56
CN5
HG 2(+)
FG I
HG B(+)
MR GND
HG B(−)
HG 2(−)
REG 5V
HG I (+)
COIL 2
HG 3(−)
HG I (−)
COIL I
COIL 3
HG 3(+)
NC
From/To CAPSTAN MOTOR
REC/PB 2.4 Vp-p
R413 430
C414 0.0022
D401 DAN202K
REG 5V
IC401
VC5035
DRUM MDA
C408 0.1
C409 10/16
C415 0.1
R407 22K
R408 150K
C406 470P
R405 33K
R404 27K
C405 0.01
C404 0.1
R411 0.68
C413 0.0033
R414 10K
R412 470
R409 47K
C412 470P
C411 0.0022
R410 100
C416 10/16
C410 0.047
C407 0.047
R406 5.6K
C401 10/16
C402 10/16
C403 10/16
R401 2.2
R402 2.2
R403 2.2
R417 100
BRK
START STOP
MIX
ERROR AMP
DRIVE
DIFERANCE AMP & GAIN VARIABLE AMP
HALL AMP & DRIVE WAVE MIXER
CN3
HG 2(−)
HG B(−)
HG 2(+)
HG 3(+)
COIL 3
COIL 2
PU (+)
FG (+)
PU (−)
FG (−)
COIL I
HG I (+)
HG B(+)
HG I (−)
HG 3(−)
From/To DRUM MOTOR
REC/PB 3.0 Vp-p
Q203 2SB766(QR)
Q204 2SJ146
TP204 REG 5V
REC/PB 2.0 Vp-p
Q201 DTA143ZK
Q202 2SB1132(QR)
D203 FMN1
D204 RD20EB2
IC402 BA10339-F
IC 402
R416 10K
R425 9.1K
R423 4.7K
R424 15K
R422 4.7K
R421 4.7K
R418 1K
R419 2K
R420 1K
R415 10K
REC/PB 4.0 Vp-p
D204
R209 8.2K
R211 12K
R210 1K
REG 8V
C204 82/10
C205 0.1/50
R212 1K
R202 4.7K
Q201
R204 22K
R203 1K
R205 0
R206 13K
Q202
D203
WER ON(L)
REG 8V TP203
R506 1K
C513 0.022
IC501 M51798FP
C504 47/6.3
R503 470
R505 470K
C503 1000P
R504 1K
C517 10/16
C502 0.1
C510 10/16
C506 470P
C509 0.01
C508 10P
R508 4.7K
R509 1M
R511 10K
R507 470K
R510 47K
C507 0.1
C511 1
Vcc
DRUM FG
DRUM PG
PB CTL PULSE AMP
CAPSTAN FG AMP
D
E
F
G
I
J
K
L

## 5.7 MECHACON SCHEMATIC DIAGRAM

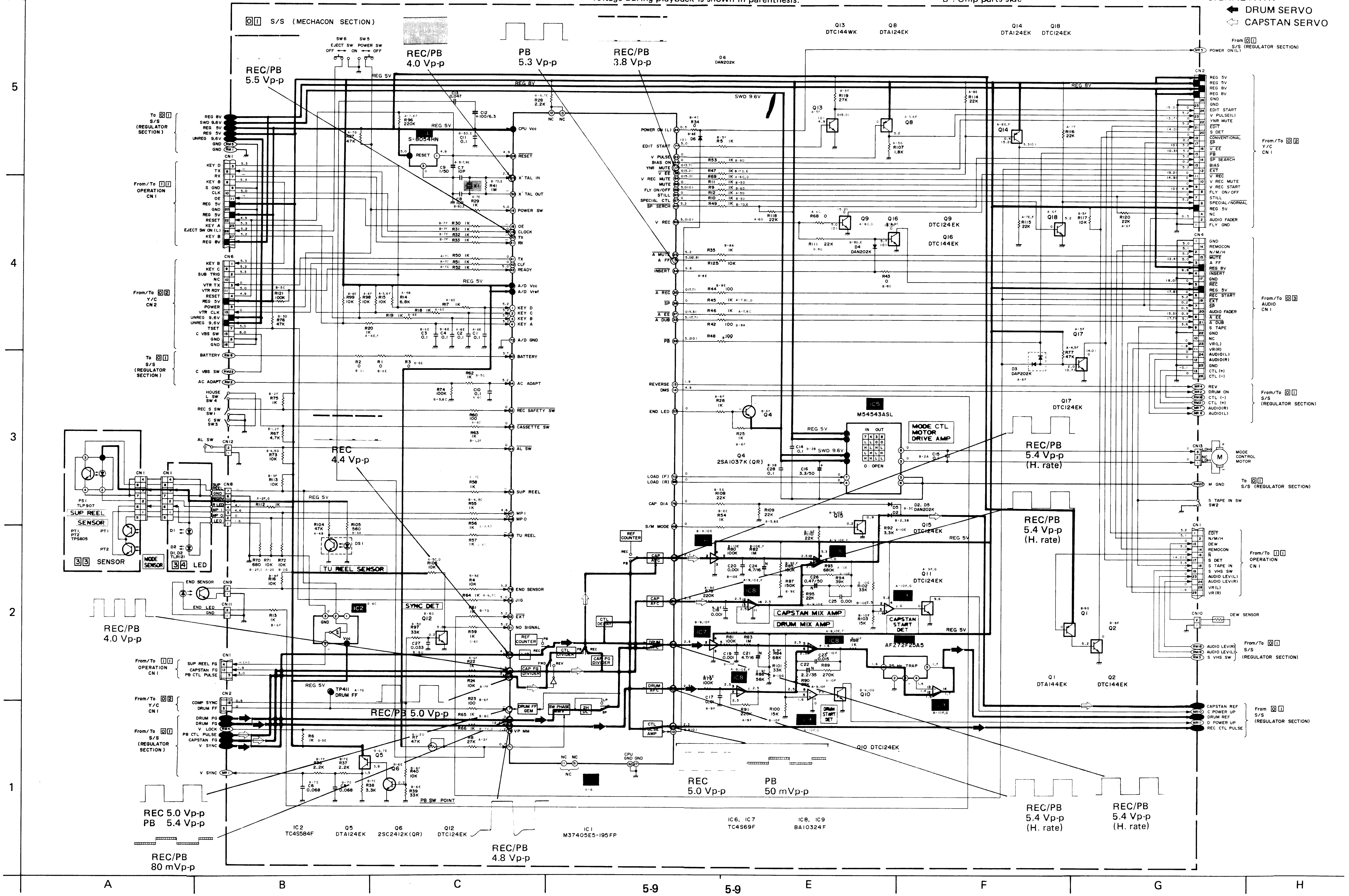
- Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

- Voltage
  REC : Y/C separator input, color bar SP mode, VHS mode.
  PB : Alignment tape, color bar SP mode, VHS mode.
  *Where voltage differ between recording and palyback, the voltage during playback is shown in parenthesis.

- Address of chip parts
  A-1D
  —Address
  —A : Discrete parts side
  B : Chip parts side

- Waveform
  REC : Y/C separator input, color bar SP mode, VHS mode.
  PB : Alignment tape, color bar SP mode, VHS mode.

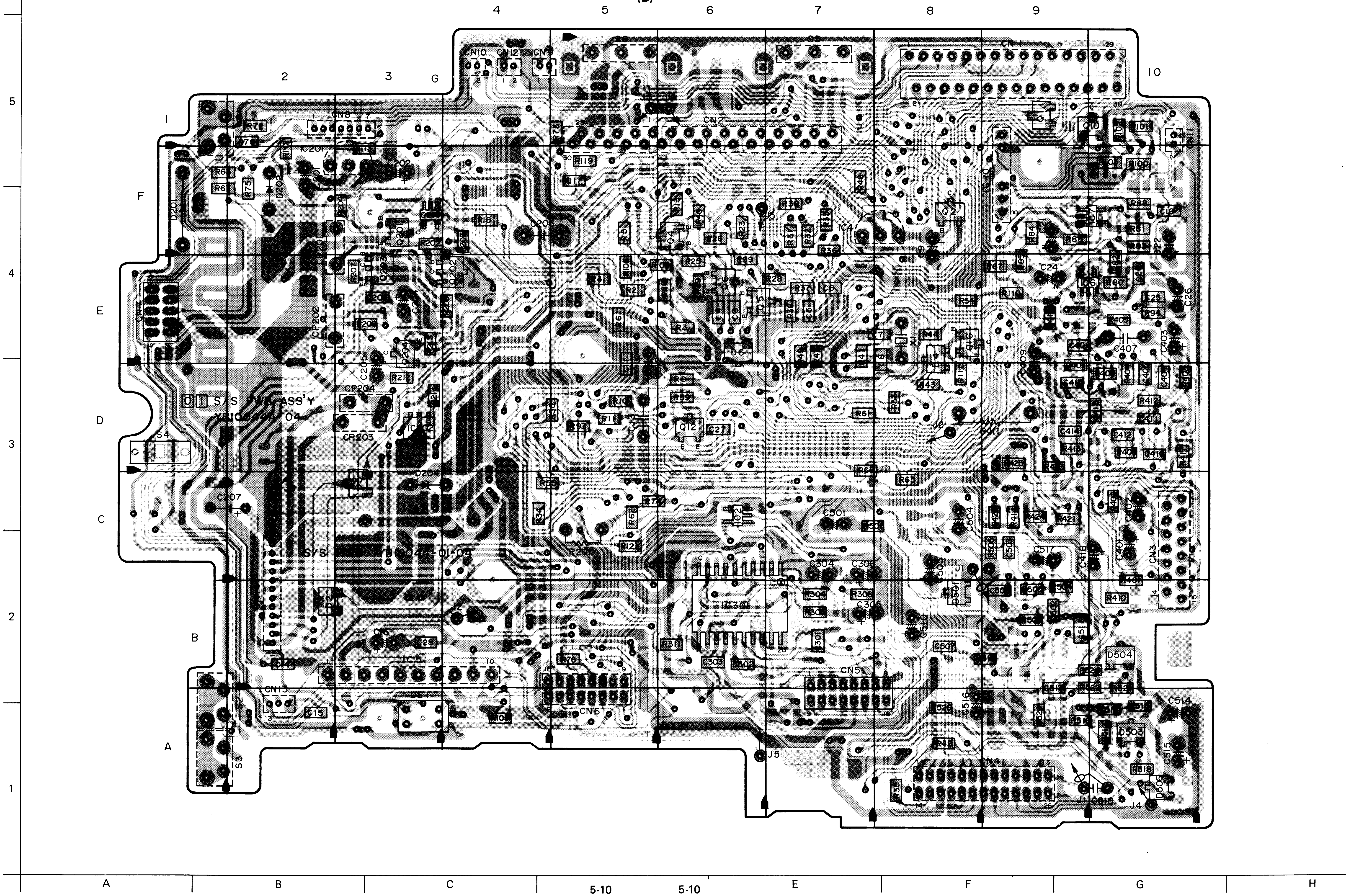
- SIGNAL PATH
  ⬅ DRUM SERVO
  ⇦ CAPSTAN SERVO



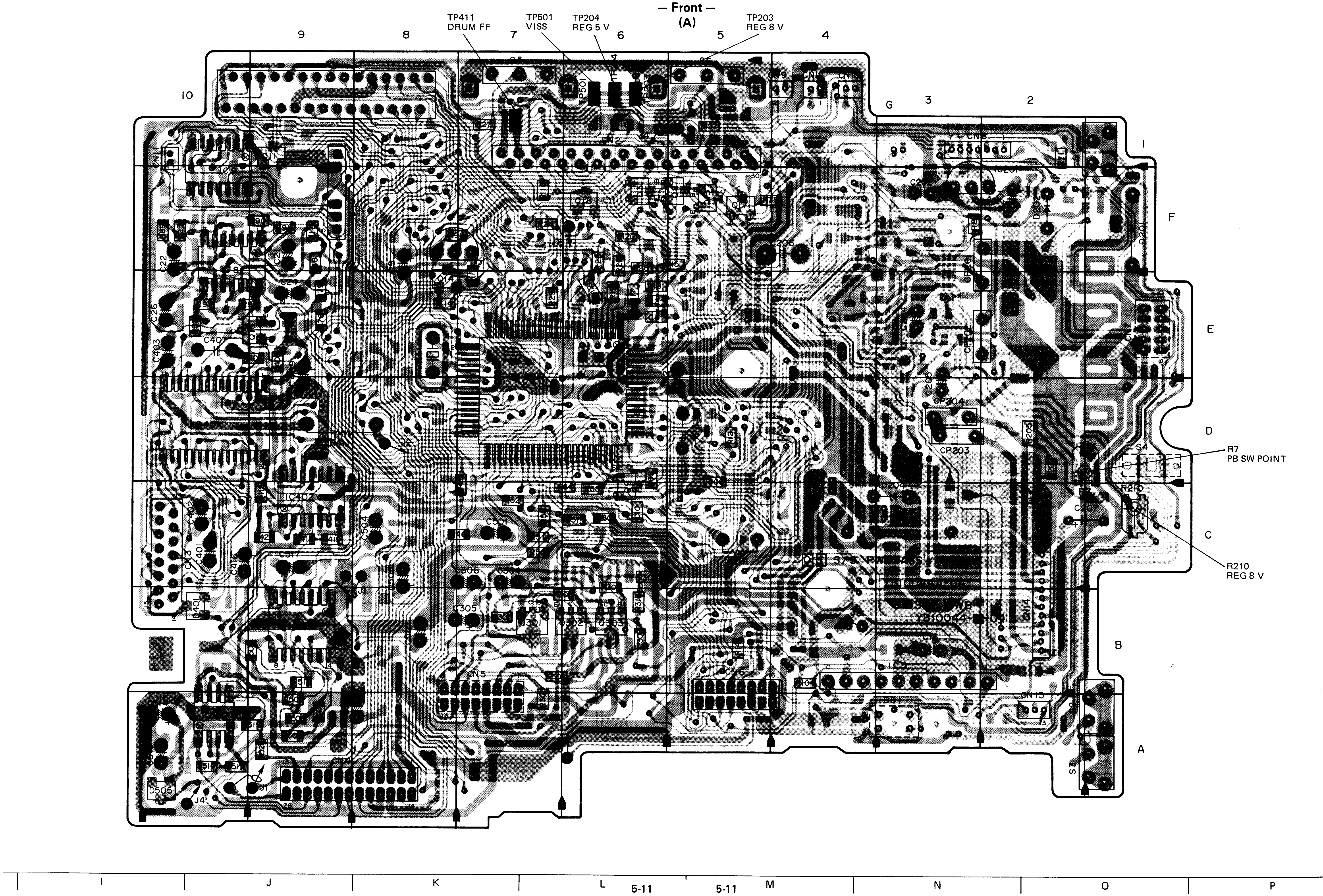
01 S/S (MECHACON SECTION)
REC/PB 5.5 Vp-p
REC/PB 4.0 Vp-p
PB 5.3 Vp-p
REC/PB 3.8 Vp-p
REC 4.4 Vp-p
REC/PB 5.0 Vp-p
REC/PB 4.0 Vp-p
REC 5.0 Vp-p
PB 5.4 Vp-p
REC/PB 80 mVp-p
REC/PB 4.8 Vp-p
REC 5.0 Vp-p
PB 50 mVp-p
REC/PB 5.4 Vp-p (H. rate)
REC/PB 5.4 Vp-p (H. rate)
REC/PB 5.4 Vp-p (H. rate)
REC/PB 5.4 Vp-p (H. rate)
SW6 EJECT SW
SW5 POWER SW
S-8054HN
RESET
CPU Vcc
X'TAL IN
X'TAL OUT
POWER SW
A/D Vcc
A/D Vref
A/D GND
BATTERY
AC ADAPT
REC SAFETY SW
CASSETTE SW
AL SW
SUP REEL
TU REEL
END SENSOR
SYNC DET
TU REEL SENSOR
PS1 TLP907
SUP REEL SENSOR
PT1, PT2 TPS605
D1, D2 TLR121
33 SENSOR
34 LED
MODE SENSOR
IC5 M54543ASL
MODE CTL MOTOR DRIVE AMP
Q4 2SA1037K (QR)
CAPSTAN MIX AMP
DRUM MIX AMP
CAPSTAN START DET
AF272F25A5
REF COUNTER
CAP FG DIVIDER
CTL DIVIDER
DRUM FF GEN
SW PHASE
PG DIVIDER
CTL DELAY
DRUM START DET
TRAP
TP411 DRUM FF
PB SW POINT
Q13 DTC144WK
Q8 DTA124EK
Q14 DTA124EK
Q18 DTC124EK
Q9 DTC124EK
Q16 DTC144EK
Q17 DTC124EK
Q11 DTC124EK
Q15 DTC124EK
Q1 DTA144EK
Q2 DTC144EK
Q10 DTC124EK
D3 DAP202K
D4 DAN202K
D6 DAN202K
D2, D5 DAN202K
MODE CONTROL MOTOR
DEW SENSOR
S TAPE IN SW SW2
IC2 TC4S584F
Q5 DTA124EK
Q6 2SC2412K(QR)
Q12 DTC124EK
IC1 M37405E5-195FP
IC6, IC7 TC4S69F
IC8, IC9 BA10324F
To 01 S/S (REGULATOR SECTION)
From/To 11 OPERATION CN1
From/To 02 Y/C CN2
From/To 02 Y/C CN1
From/To 03 AUDIO CN1
From/To 01 S/S (REGULATOR SECTION)
From 01 S/S (REGULATOR SECTION)
6
5
4
3
2
1
A
B
C
D
E
F
G
H

## 5.8 S/S CIRCUIT BOARD

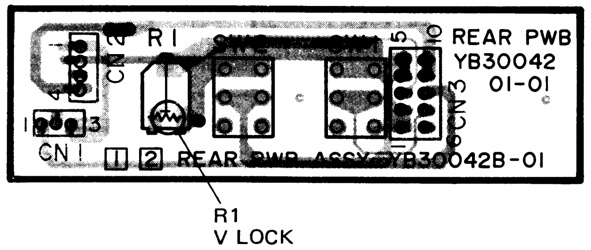
— Rear —
(B)



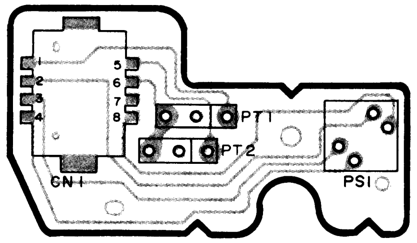
1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
H
I
S/S PWB ASS'Y
YB100444-04
CN1
CN2
CN3
CN4
CN5
CN6
CN8
CN9
CN10
CN11
CN12
CN13
CN14
IC4
IC5
IC201
IC202
IC301
S3
S4
J1
J4
J5
X1
CP202
CP203
CP204
C207
D201
D202
D204
D503
D504
R201


— Front —
(A)
TP411
DRUM FF
TP501
VISS
TP204
REG 5 V
TP203
REG 8 V
R7
PB SW POINT
R210
REG 8 V
10
9
8
7
6
5
4
G
3
2
I
F
E
D
C
B
A
I
J
K
L
M
N
O
P
CN1
CN2
CN3
CN4
CN5
CN6
CN13
CN14
CN18
IC201
IC401
IC402
CP203
CP204
C22
C24
C26
C207
C401
C402
C403
C416
C501
C504
C517
C305
C306
Q301
Q302
Q303
Q14
D201
D204
D401
D505
S3
S4
J1
J4
R205
R210
SYS PWB ASS'Y
SYS PWB
YB10044-■-04

## – REAR –

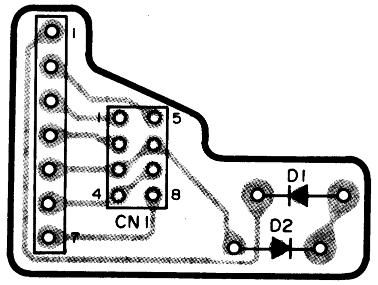

REAR PWB
YB30042
01-01
R1
CN1
CN2
CN3
1 2 REAR PWB ASSY YB30042B-01
R1
V LOCK

## – SENSOR –


CN1
PT1
PT2
PS1

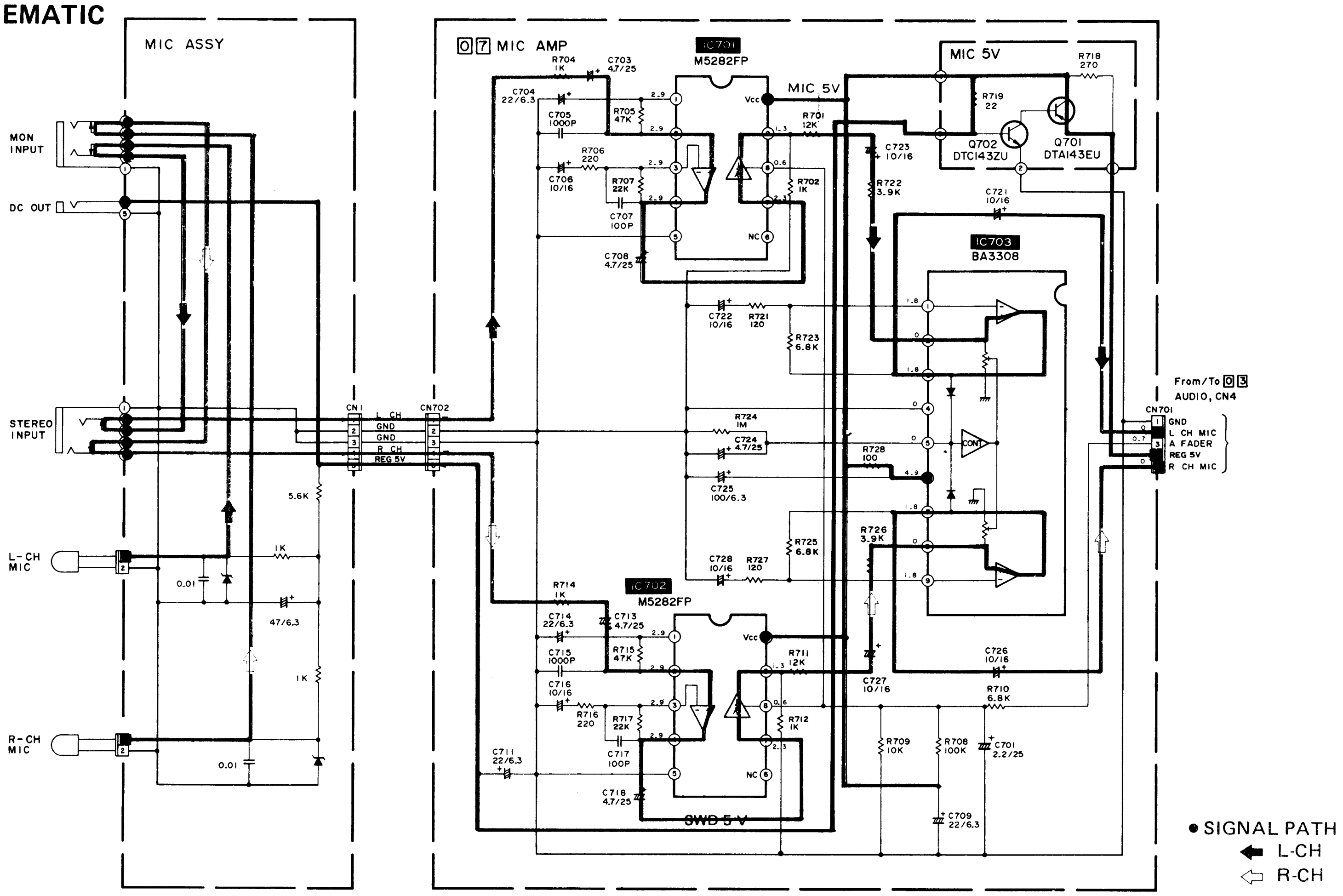
3 3 SENSOR PWB ASSY YQ41188A-3
SENSOR PWB YB40033-01-04

## – LED –



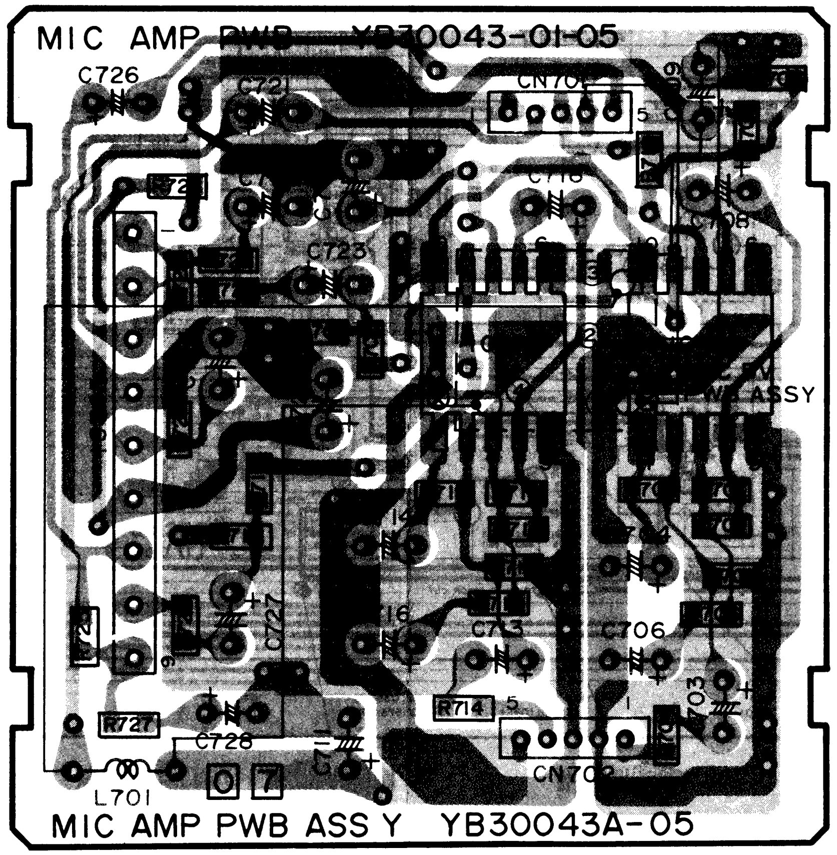
3 4 LED PWB ASSY YQ41189A-2
LED PWB YB40034-01-03

## 5.9 MIC AMP SCHEMATIC DIAGRAM

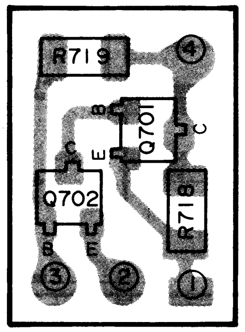

MIC ASSY
MON INPUT
DC OUT
STEREO INPUT
L-CH MIC
R-CH MIC
0 7 MIC AMP
IC701 M5282FP
IC702 M5282FP
IC703 BA3308
MIC 5V
Q701 DTA143EU
Q702 DTC143ZU
CN1
CN702
CN701
L CH
GND
GND
R CH
REG 5V
From/To 0 3 AUDIO, CN4
GND
L CH MIC
A FADER
REG 5V
R CH MIC
SWD 5V
● SIGNAL PATH
L-CH
R-CH

●Voltage (DC): Measured in Hi-Fi REC mode without audio signal input.

## 5.10 MIC AMP CIRCUIT BOARD


MIC AMP PWB YB30043-01-05
C726
C721
CN701
C723
C727
C713
C706
R714
R727
C728
L701
CN702
0 7
MIC ASSY
MIC AMP PWB ASSY YB30043A-05

## – MIC 5 V –

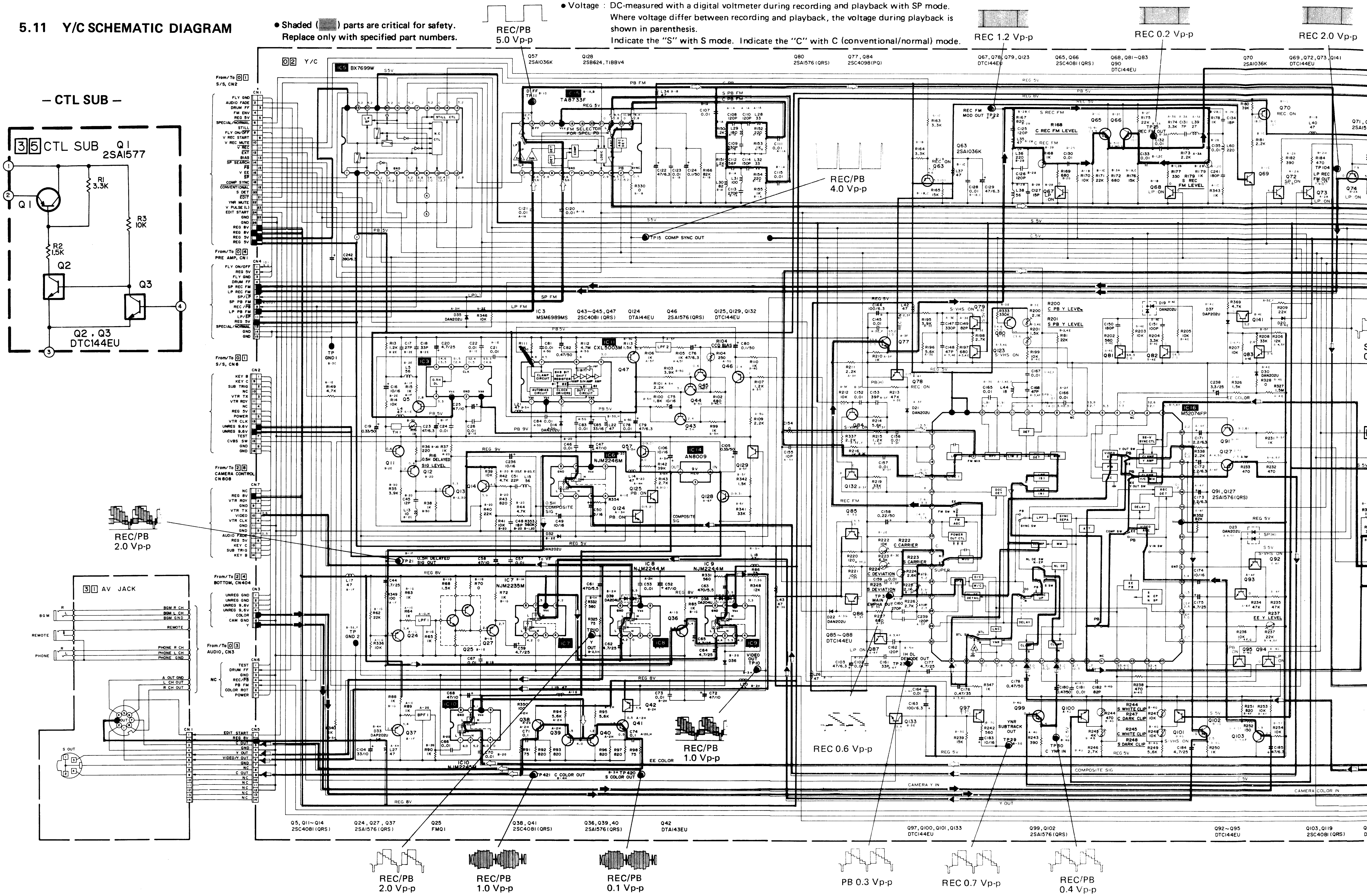

R719
Q701
Q702
R718

MIC 5V PWB ASSY YB20281A
MIC 5V PWB YB20281

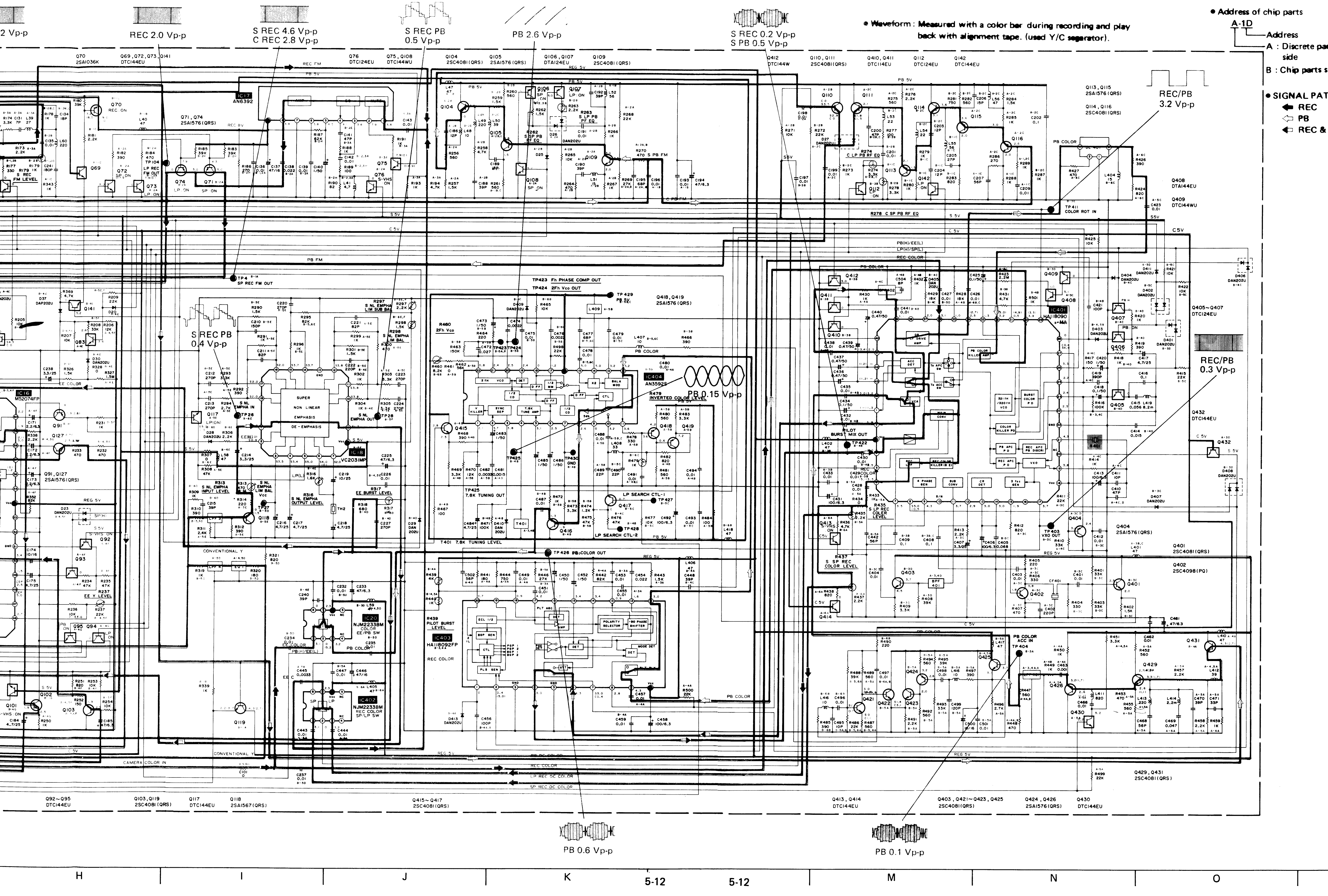
## 5.11 Y/C SCHEMATIC DIAGRAM

- Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

- Voltage : DC-measured with a digital voltmeter during recording and playback with SP mode. Where voltage differ between recording and playback, the voltage during playback is shown in parenthesis. Indicate the "S" with S mode. Indicate the "C" with C (conventional/normal) mode.



REC/PB 5.0 Vp-p
REC 1.2 Vp-p
REC 0.2 Vp-p
REC 2.0 Vp-p
02 Y/C
– CTL SUB –
35 CTL SUB
Q1 2SA1577
R1 3.3K
R2 1.5K
R3 10K
Q1
Q2
Q3
Q2 , Q3 DTC144EU
From/To 01 S/S, CN2
From/To 04 PRE AMP, CN1
From/To 01 S/S, CN6
From/To 28 CAMERA CONTROL CN808
From/To 24 BOTTOM, CN404
From/To 03 AUDIO, CN3
31 AV JACK
IC5 BX7699W
IC1 TA8733F
IC3 MSM6989MS
IC11 CXL5003M
IC6 NJM2246M
IC14 AN8009
IC7 NJM2235M
IC8 NJM2244M
IC9 NJM2244M
IC10 NJM2245M
IC16 M52074FP
REC/PB 4.0 Vp-p
TP15 COMP SYNC OUT
REC/PB 2.0 Vp-p
REC/PB 1.0 Vp-p
REC 0.6 Vp-p
Q5, Q11~Q14 2SC4081(QRS)
Q24, Q27, Q37 2SA1576(QRS)
Q25 FMQ1
Q38, Q41 2SC4081(QRS)
Q36, Q39, Q40 2SA1576(QRS)
Q42 DTA143EU
Q97, Q100, Q101, Q133 DTC144EU
Q99, Q102 2SA1576(QRS)
Q92~Q95 DTC144EU
Q103, Q119 2SC4081(QRS)
REC/PB 2.0 Vp-p
REC/PB 1.0 Vp-p
REC/PB 0.1 Vp-p
PB 0.3 Vp-p
REC 0.7 Vp-p
REC/PB 0.4 Vp-p
A
B
C
E
F
G
H
1
2
3
4
5
6


2 Vp-p
REC 2.0 Vp-p
S REC 4.6 Vp-p
C REC 2.8 Vp-p
S REC PB
0.5 Vp-p
PB 2.6 Vp-p
S REC 0.2 Vp-p
S PB 0.5 Vp-p
REC/PB
3.2 Vp-p
REC/PB
0.3 Vp-p
S REC PB
0.4 Vp-p
PB 0.15 Vp-p
PB 0.6 Vp-p
PB 0.1 Vp-p
IC17 AN6392
IC16 M52074FP
IC18 VC2031MP
IC404 AN3592S
IC401 HA118090
IC403 HA118092FP
IC20 NJM2233BM COLOR EE/PB SW
IC402 NJM2233BM REC COLOR SP/LP SW
SUPER NON LINEAR EMPHASIS
DE-EMPHASIS
Q70 2SA1036K
Q69, Q72, Q73, Q141 DTC144EU
Q76 DTC124EU
Q75, Q108 DTC144WU
Q104 2SC4081(QRS)
Q105 2SA1576(QRS)
Q106, Q107 DTA124EU
Q109 2SC4081(QRS)
Q412 DTC144W
Q110, Q111 2SC4081(QRS)
Q410, Q411 DTC114EU
Q112 DTC124EU
Q142 DTC144EU
Q113, Q115 2SA1576(QRS)
Q114, Q116 2SC4081(QRS)
Q71, Q74 2SA1576(QRS)
Q408 DTA144EU
Q409 DTC144WU
Q405~Q407 DTC124EU
Q418, Q419 2SA1576(QRS)
Q91, Q127 2SA1576(QRS)
Q432 DTC144EU
Q404 2SA1576(QRS)
Q401 2SC4081(QRS)
Q402 2SC4098(PQ)
Q429, Q431 2SC4081(QRS)
Q92~Q95 DTC144EU
Q103, Q119 2SC4081(QRS)
Q117 DTC144EU
Q118 2SA1567(QRS)
Q415~Q417 2SC4081(QRS)
Q413, Q414 DTC144EU
Q403, Q421~Q423, Q425 2SC4081(QRS)
Q424, Q426 2SA1576(QRS)
Q430 DTC144EU
TP4 SP REC FM OUT
TP423 Fh PHASE COMP OUT
TP424 2Fh Vco OUT
TP429
TP425 7.8K TUNING OUT
TP426 PB COLOR OUT
TP427 LP SEARCH CTL-1
TP428 LP SEARCH CTL-2
TP411 COLOR ROT IN
TP403 VXO OUT
TP404 PB COLOR ACC IN
TP422 PILOT BURST MIX OUT
TP26
TP27
TP28
TP104 LP REC FM OUT
REC FM
PB 5V
REG 5V
REC 8V
PB FM
C PB FM
S 5V
C 5V
PB COLOR
REC COLOR
PB(H)/EE(L)
LP(H)/SP(L)
R278 C SP PB RF EQ
CAMERA COLOR IN
CONVENTIONAL Y
REC DC COLOR
LP REC DC COLOR
SP REC DC COLOR
PB DC COLOR
H
I
J
K
M
N
O

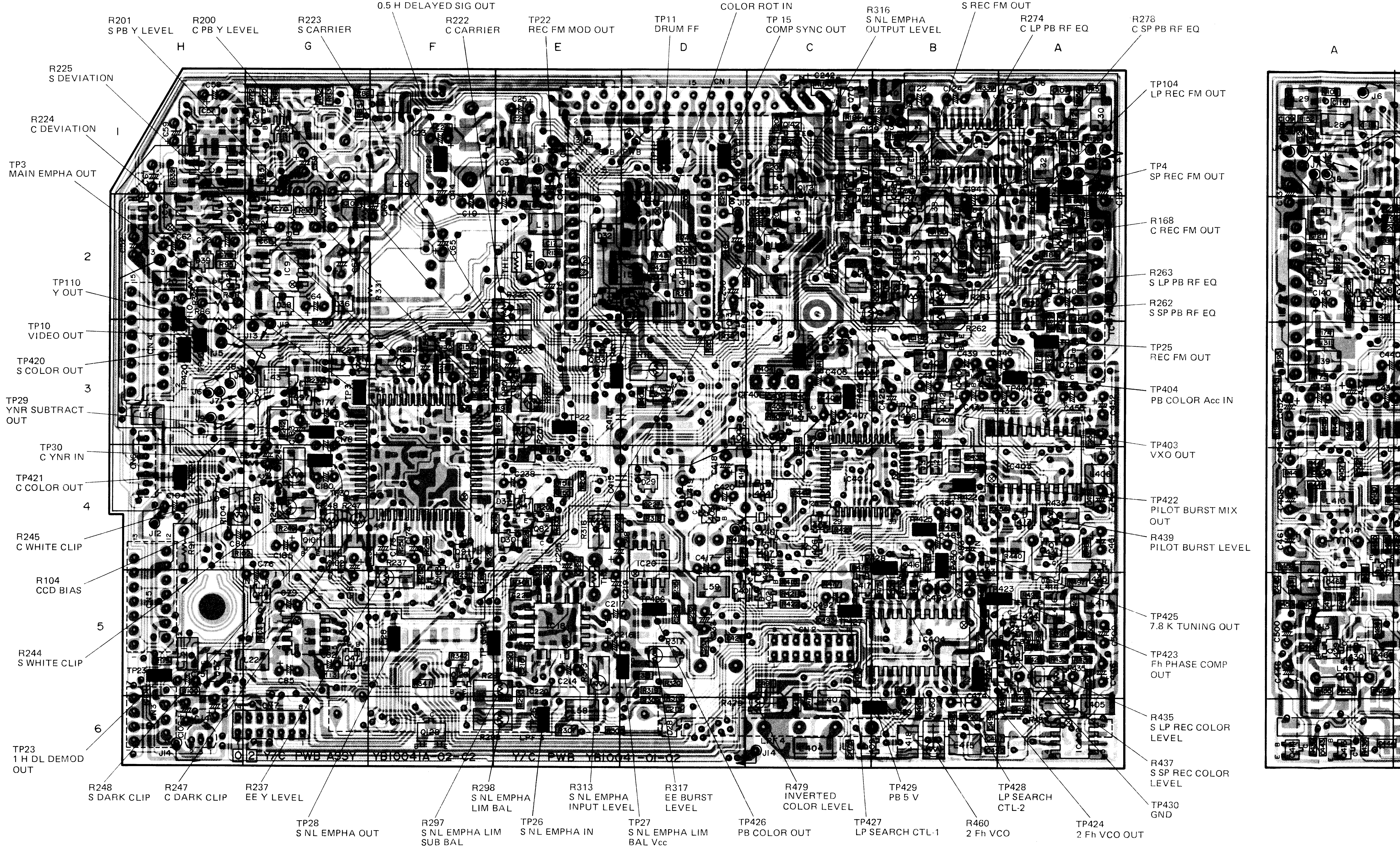
- Waveform : Measured with a color bar during recording and play back with alignment tape. (used Y/C separator).

- Address of chip parts
  A-1D — Address
  A : Discrete parts side
  B : Chip parts side

- SIGNAL PATH
  ◀ REC
  ⇦ PB
  ◀ REC & PB

## 5.12 Y/C CIRCUIT BOARD

— Rear —
(B)



TP21
0.5 H DELAYED SIG OUT
R201
S PB Y LEVEL
R200
C PB Y LEVEL
R223
S CARRIER
R222
C CARRIER
TP22
REC FM MOD OUT
TP11
DRUM FF
TP411
COLOR ROT IN
TP 15
COMP SYNC OUT
R316
S NL EMPHA
OUTPUT LEVEL
R179
S REC FM OUT
R274
C LP PB RF EQ
R278
C SP PB RF EQ
R225
S DEVIATION
R224
C DEVIATION
TP3
MAIN EMPHA OUT
TP110
Y OUT
TP10
VIDEO OUT
TP420
S COLOR OUT
TP29
YNR SUBTRACT
OUT
TP30
C YNR IN
TP421
C COLOR OUT
R245
C WHITE CLIP
R104
CCD BIAS
R244
S WHITE CLIP
TP23
1 H DL DEMOD
OUT
R248
S DARK CLIP
R247
C DARK CLIP
R237
EE Y LEVEL
TP28
S NL EMPHA OUT
R297
S NL EMPHA LIM
SUB BAL
R298
S NL EMPHA
LIM BAL
TP26
S NL EMPHA IN
R313
S NL EMPHA
INPUT LEVEL
TP27
S NL EMPHA LIM
BAL Vcc
R317
EE BURST
LEVEL
TP426
PB COLOR OUT
R479
INVERTED
COLOR LEVEL
TP427
LP SEARCH CTL-1
TP429
PB 5 V
R460
2 Fh VCO
TP428
LP SEARCH
CTL-2
TP424
2 Fh VCO OUT
TP430
GND
R437
S SP REC COLOR
LEVEL
R435
S LP REC COLOR
LEVEL
TP423
Fh PHASE COMP
OUT
TP425
7.8 K TUNING OUT
R439
PILOT BURST LEVEL
TP422
PILOT BURST MIX
OUT
TP403
VXO OUT
TP404
PB COLOR Acc IN
TP25
REC FM OUT
R262
S SP PB RF EQ
R263
S LP PB RF EQ
R168
C REC FM OUT
TP4
SP REC FM OUT
TP104
LP REC FM OUT
Y/C PWB ASSY YB10041A-02-C2
Y/C PWB YB10041-01-02
CN I
CN 2
H
G
F
E
D
C
B
A
A
I
2
3
4
5
6
1
2
3
4
5
6
A
B
C
E
F
G
H

Q

M OUT

M OUT

M OUT

F EQ

F EQ

OUT

R Acc IN

URST MIX

URST LEVEL

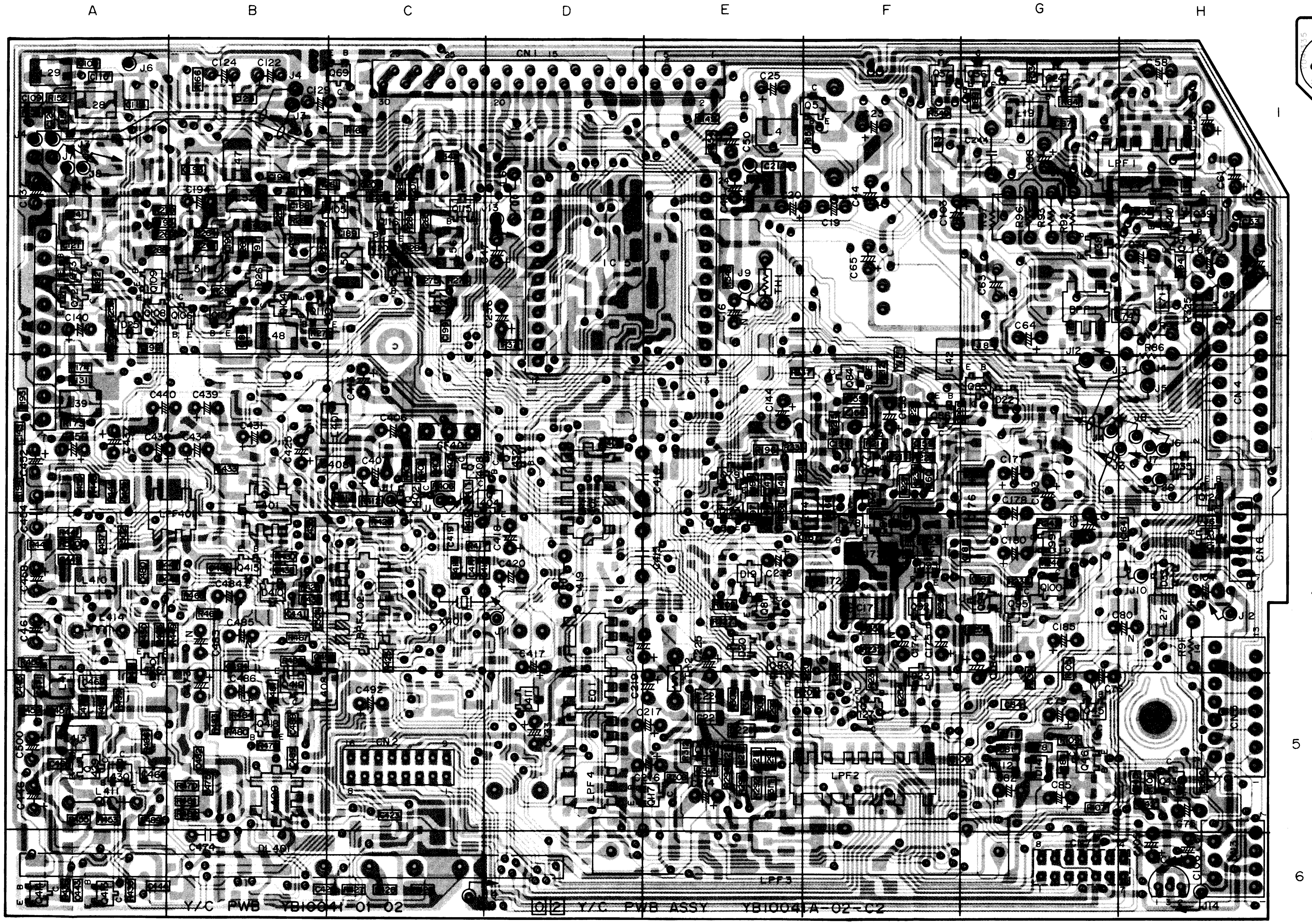
NING OUT

E COMP

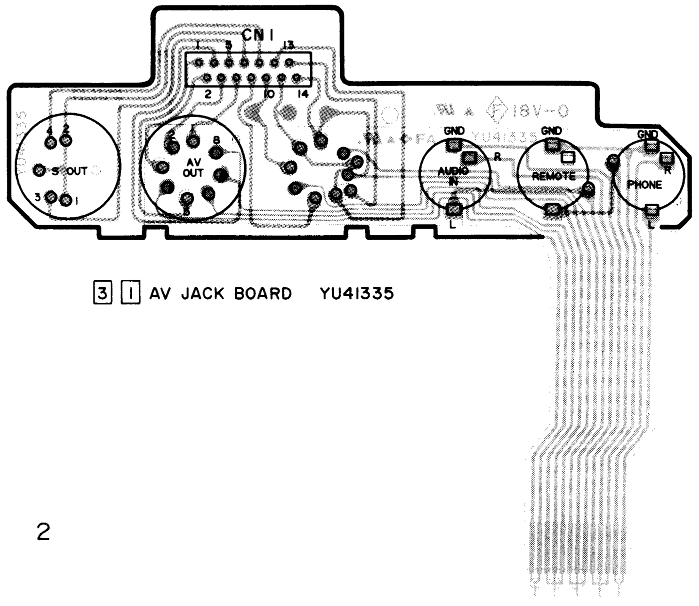
COLOR

COLOR

## – Front –
(A)

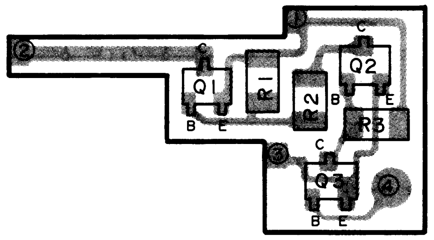

A
B
C
D
E
F
G
H
1
2
3
4
5
6
CN1
CN2
CN3
CN4
LPF1
LPF2
LPF3
LPF4
BPF
LPF401
L410
L411
DL401
J6
J7
J8
J9
J12
J14
C25
C65
C64
C140
C439
C440
Y/C PWB YB10041-01-02
0 2 Y/C PWB ASSY YB10041A-02-C2

## – AV JACK –


CN1
S OUT
AV OUT
AUDIO IN
REMOTE
PHONE
GND
R
L
18V-0
YU41335

3 1 AV JACK BOARD YU41335

## – CTL SUB –


Q1
Q2
Q3
R1
R2
R3
B
C
E
②
③
④

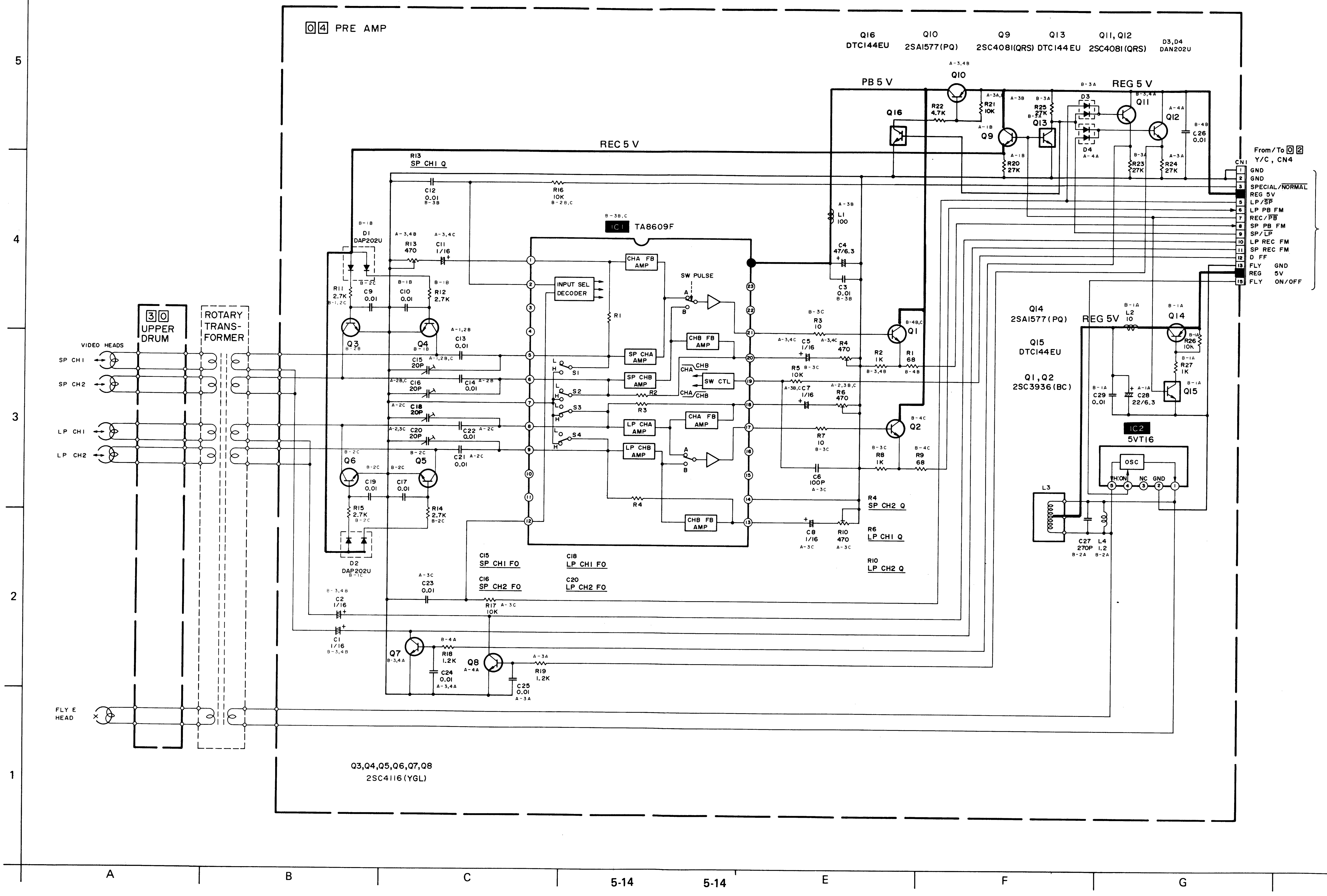
3 5 CTL SUB PWB ASSY
YB20274A
CTL SUB PWB
YB20274

H I J K M N O

## 5.13 PRE AMP SCHEMATIC DIAGRAM

- Address of chip parts

A-1D — Address
A : Discrete parts side
B : Chip parts side

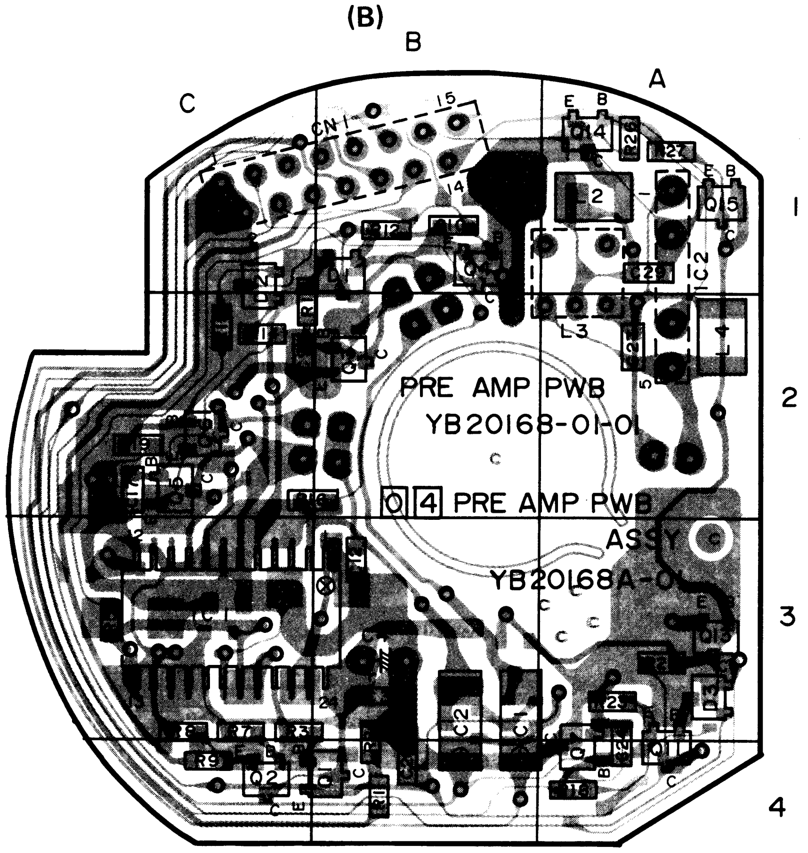


04 PRE AMP
30 UPPER DRUM
ROTARY TRANS-FORMER
VIDEO HEADS
SP CH1
SP CH2
LP CH1
LP CH2
FLY E HEAD
Q16 DTC144EU
Q10 2SA1577(PQ)
Q9 2SC4081(QRS)
Q13 DTC144EU
Q11, Q12 2SC4081(QRS)
D3, D4 DAN202U
PB 5 V
REG 5 V
REC 5 V
IC1 TA8609F
CHA FB AMP
INPUT SEL DECODER
SW PULSE
CHB FB AMP
SP CHA AMP
SP CHB AMP
SW CTL
LP CHA AMP
LP CHB AMP
CHA FB AMP
CHB FB AMP
S1
S2
S3
S4
R13 SP CH1 Q
R4 SP CH2 Q
R6 LP CH1 Q
R10 LP CH2 Q
C15 SP CH1 FO
C16 SP CH2 FO
C18 LP CH1 FO
C20 LP CH2 FO
D1 DAP202U
D2 DAP202U
Q14 2SA1577(PQ)
Q15 DTC144EU
Q1, Q2 2SC3936(BC)
IC2 5VT16
OSC
L3
C27 270P
L4 1.2
From/To 02 Y/C, CN4
CN1
1 GND
2 GND
3 SPECIAL/NORMAL
4 REG 5V
5 LP/SP
6 LP PB FM
7 REC/PB
8 SP PB FM
9 SP/LP
10 LP REC FM
11 SP REC FM
12 D FF
13 FLY GND
14 REG 5V
15 FLY ON/OFF
Q3, Q4, Q5, Q6, Q7, Q8 2SC4116(YGL)
A
B
C
E
F
G
1
2
3
4
5
6

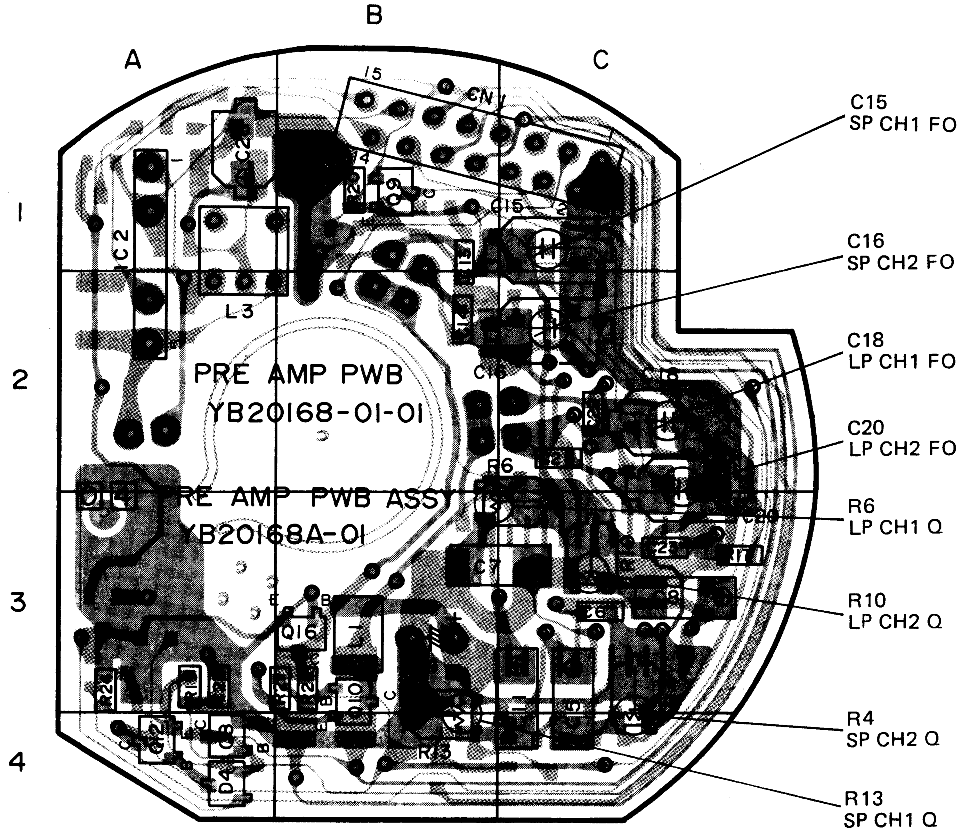
## 5.14 PRE AMP, UPPER DRUM & TRIGGER CIRCUIT BOARDS

### — PRE AMP —

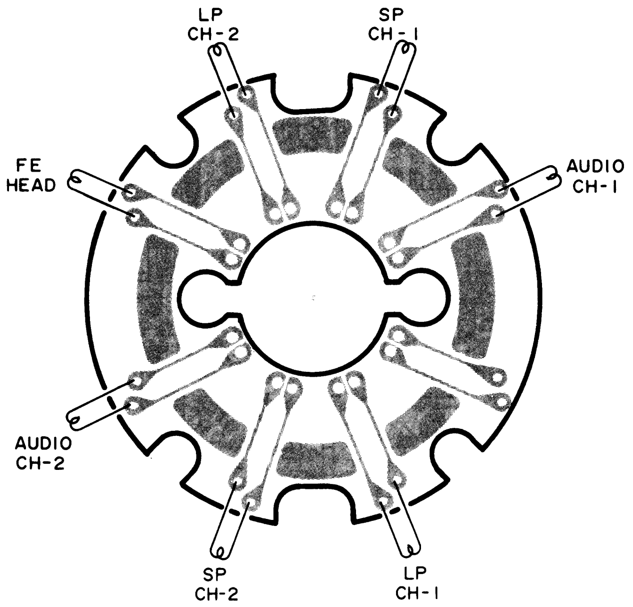
— Rear —
(B)


B
A
C
CN1
15
14
IC2
L3
L4
Q2
Q15
PRE AMP PWB
YB20168-01-01
04 PRE AMP PWB
ASSY
YB20168A-01
1
2
3
4

— Front —
(A)

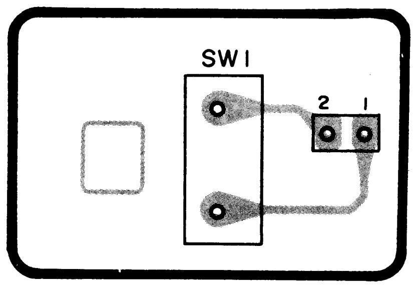

B
A
C
CN1
15
IC2
L3
Q16
R6
R13
PRE AMP PWB
YB20168-01-01
04 PRE AMP PWB ASSY
YB20168A-01
1
2
3
4
C15
SP CH1 FO
C16
SP CH2 FO
C18
LP CH1 FO
C20
LP CH2 FO
R6
LP CH1 Q
R10
LP CH2 Q
R4
SP CH2 Q
R13
SP CH1 Q

### — UPPER DRUM —


LP
CH-2
SP
CH-1
FE
HEAD
AUDIO
CH-1
AUDIO
CH-2
SP
CH-2
LP
CH-1

30 UPPER DRUM BOARD ASSY YDM3033

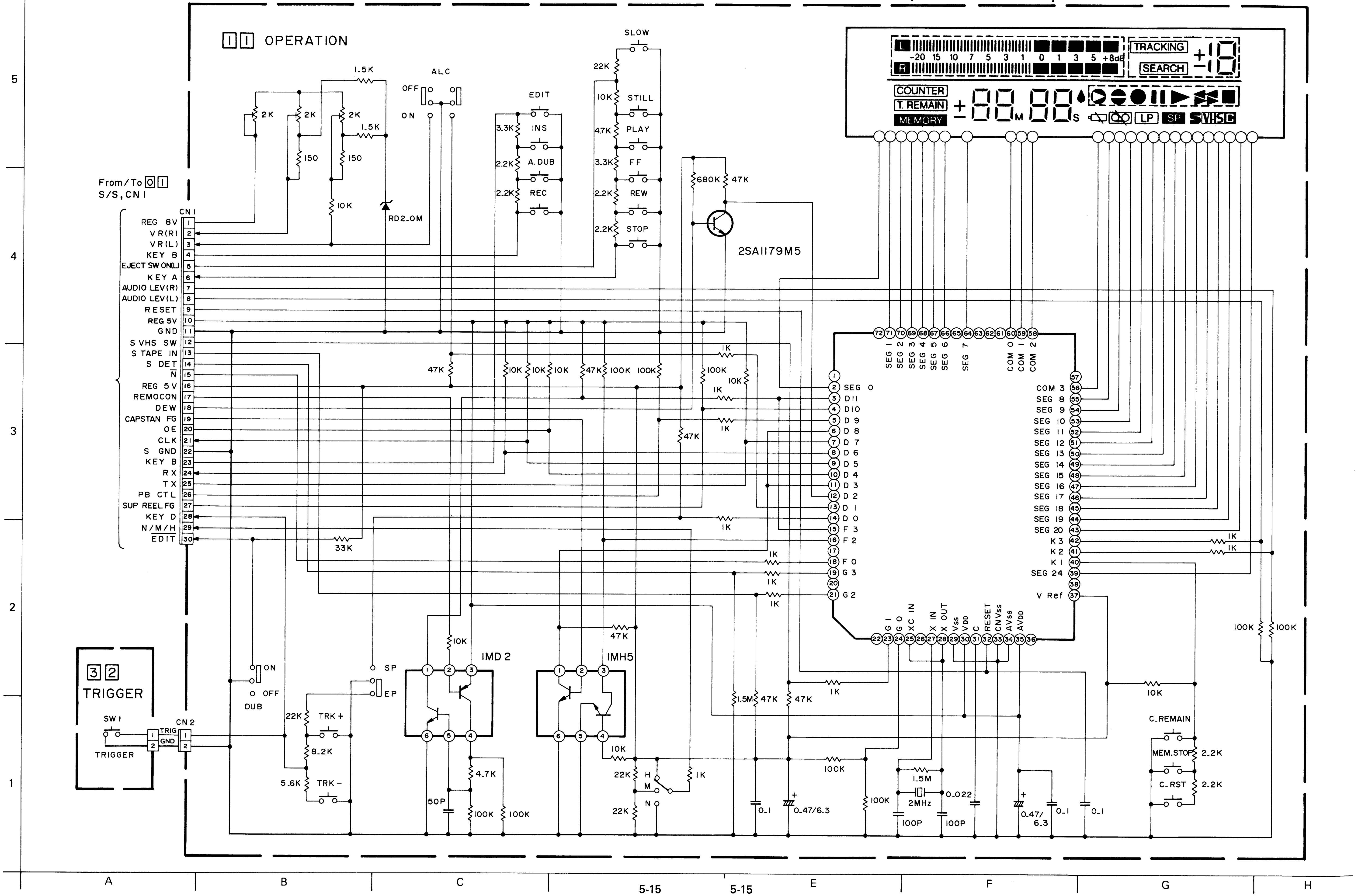
### — TRIGGER —



32 TRIG PWB ASSY YB30048A
TRIG PWB YB30048

## 5.15 OPERATION SCHEMATIC DIAGRAM

Note:
This schematic diagram is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.



11 OPERATION
From/To 01 S/S, CN1
CN1
REG 8V 1
VR(R) 2
VR(L) 3
KEY B 4
EJECT SW ON(L) 5
KEY A 6
AUDIO LEV(R) 7
AUDIO LEV(L) 8
RESET 9
REG 5V 10
GND 11
S VHS SW 12
S TAPE IN 13
S DET 14
N 15
REG 5V 16
REMOCON 17
DEW 18
CAPSTAN FG 19
OE 20
CLK 21
S GND 22
KEY B 23
RX 24
TX 25
PB CTL 26
SUP REEL FG 27
KEY D 28
N/M/H 29
EDIT 30
ALC
OFF
ON
RD2.0M
EDIT
INS
A.DUB
REC
SLOW
STILL
PLAY
FF
REW
STOP
2SA1179M5
TRACKING
SEARCH
COUNTER
T. REMAIN
MEMORY
LP
SP
S VHS
-20 15 10 7 5 3 1 0 1 3 5 +8dB
SEG 1
SEG 2
SEG 3
SEG 4
SEG 5
SEG 6
SEG 7
COM 0
COM 1
COM 2
SEG 0
D11
D10
D9
D8
D7
D6
D5
D4
D3
D2
D1
D0
F3
F2
F0
G3
G2
COM 3
SEG 8
SEG 9
SEG 10
SEG 11
SEG 12
SEG 13
SEG 14
SEG 15
SEG 16
SEG 17
SEG 18
SEG 19
SEG 20
K3
K2
K1
SEG 24
V Ref
G1
G0
XC IN
X IN
X OUT
Vss
VDD
C
RESET
CNVss
AVss
AVDD
IMD2
IMH5
H
M
N
2MHz
C.REMAIN
MEM.STOP
C.RST
32 TRIGGER
SW1
TRIGGER
CN2
TRIG
GND
ON
OFF
DUB
SP
EP
TRK+
TRK−
1.5K
2K
150
10K
22K
4.7K
3.3K
2.2K
680K
47K
100K
1K
33K
8.2K
5.6K
50P
1.5M
0.1
0.47/6.3
0.022
100P
A
B
C
D
E
F
G
H
1
2
3
4
5
6

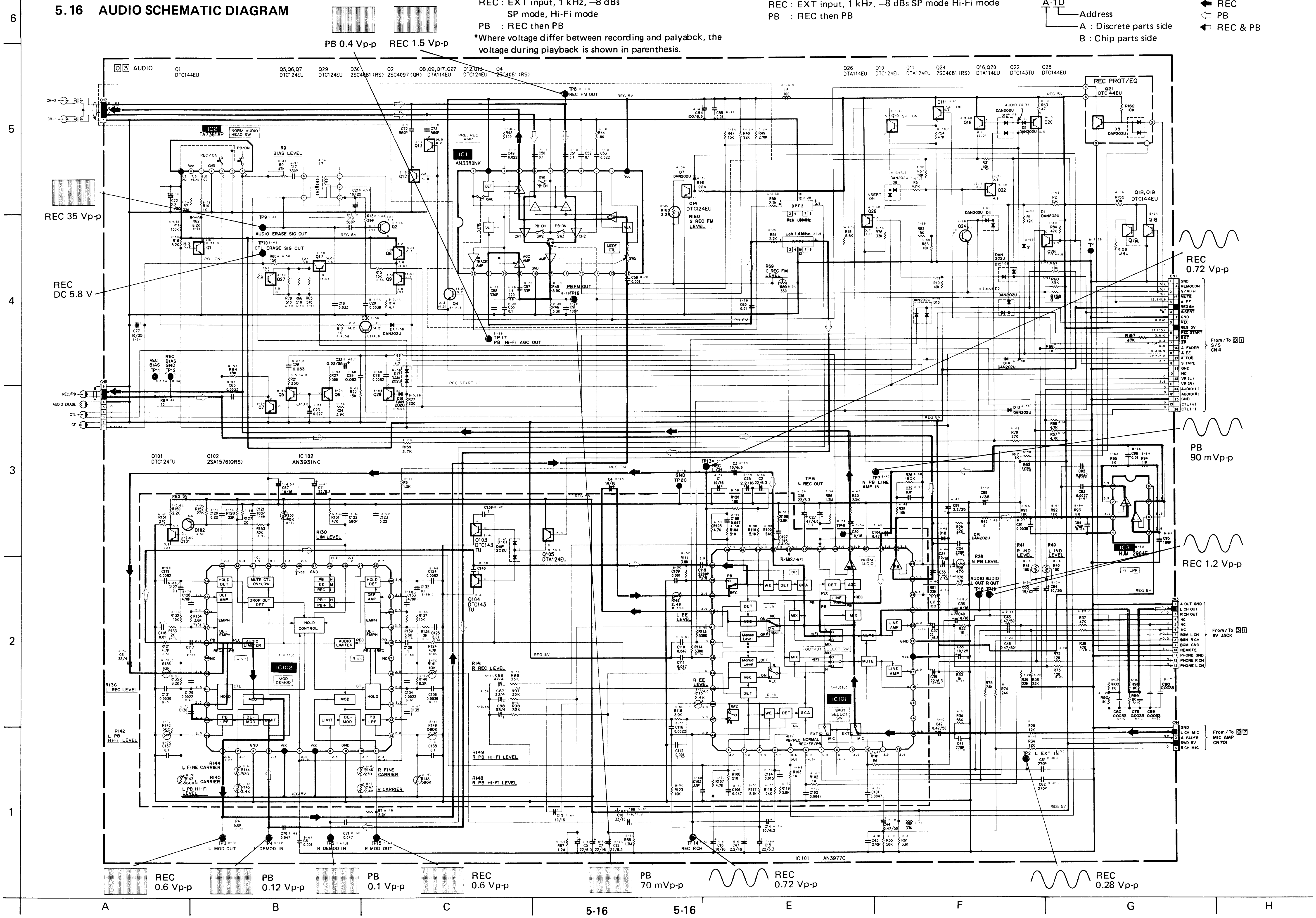
## 5.16 AUDIO SCHEMATIC DIAGRAM

- Voltage/waveform
  REC : EXT input, 1 kHz, –8 dBs
  SP mode, Hi-Fi mode
  PB : REC then PB
  *Where voltage differ between recording and palyabck, the voltage during playback is shown in parenthesis.

- Waveform
  REC : EXT input, 1 kHz, –8 dBs SP mode Hi-Fi mode
  PB : REC then PB

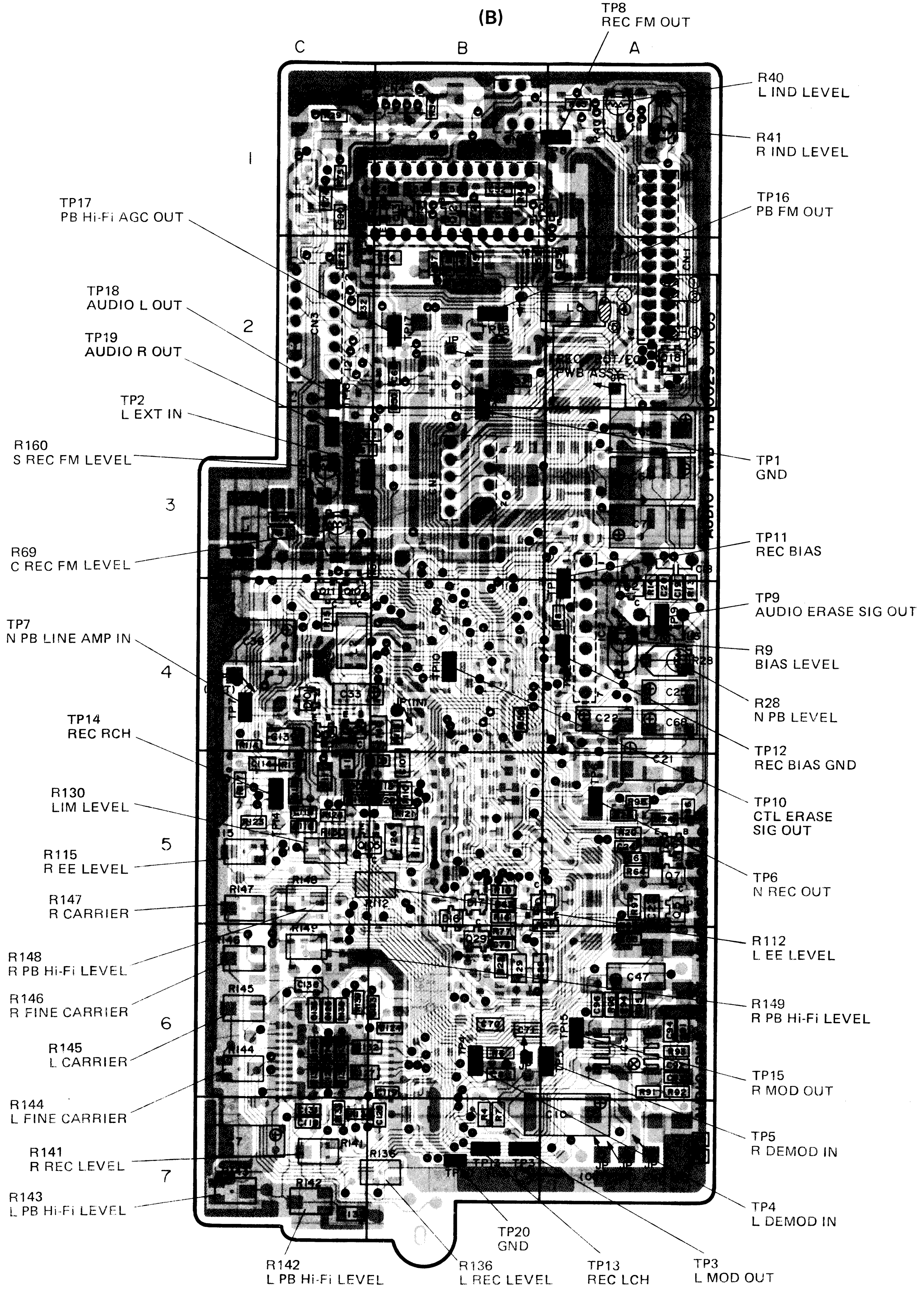
- Address of chip parts
  A-1D
  Address
  A : Discrete parts side
  B : Chip parts side

- SIGNAL PATH
  ⬅ REC
  ⇦ PB
  ⬅ REC & PB

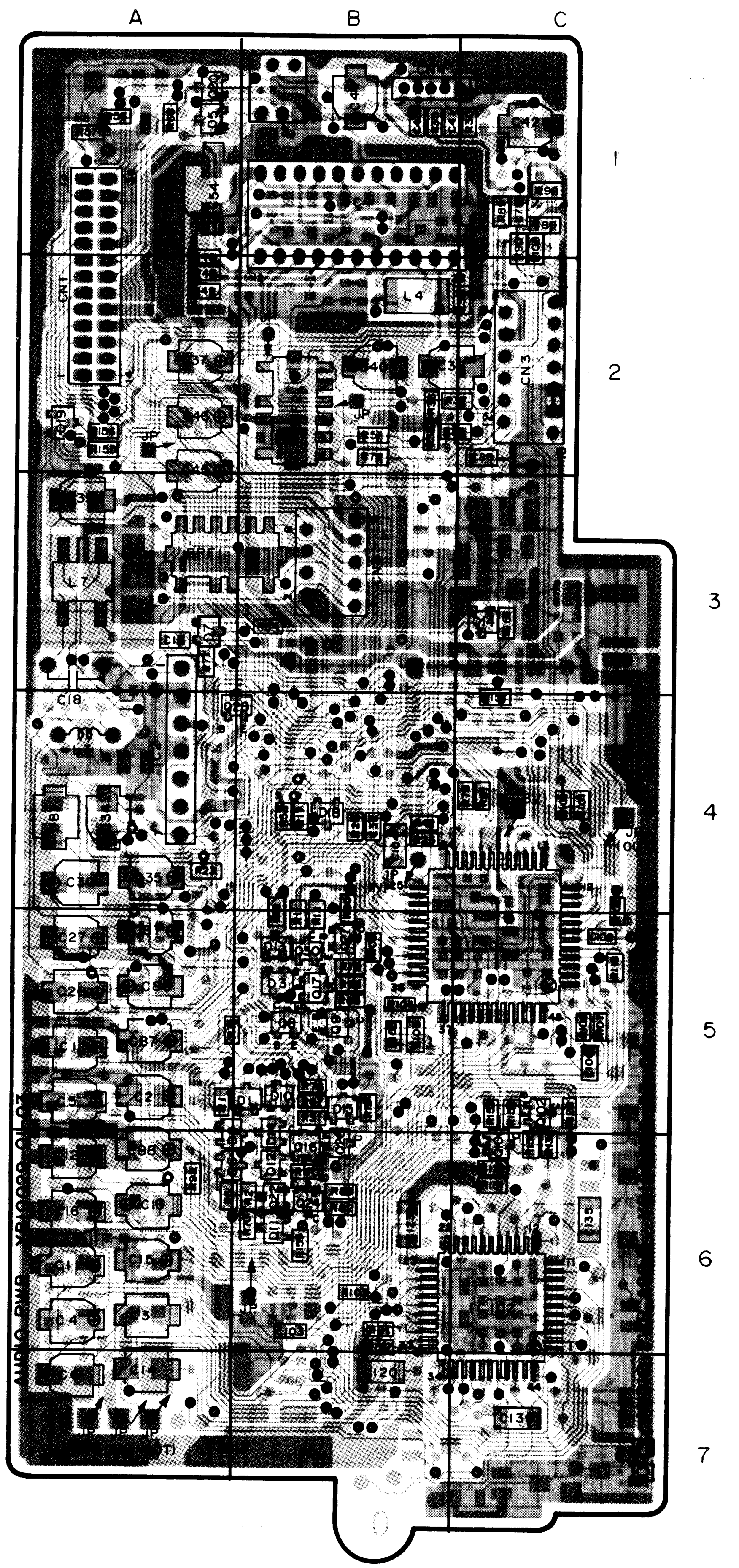

PB 0.4 Vp-p
REC 1.5 Vp-p
03 AUDIO
Q1 DTC144EU
Q5,06,Q7 DTC124EU
Q29 DTC124EU
Q30 2SC4081 (RS)
Q2 2SC4097 (QR)
Q8,Q9,Q17,Q27 DTA114EU
Q12,Q13 DTC124EU
Q4 2SC4081 (RS)
Q26 DTA114EU
Q10 DTC124EU
Q11 DTA124EU
Q24 2SC4081 (RS)
Q16,Q20 DTA114EU
Q22 DTC143TU
Q28 DTC144EU
REC PROT/EQ
Q21 DTC144EU
IC2 TA7361AP
NORM AUDIO HEAD SW
R9 BIAS LEVEL
IC1 AN3380NK
PRE REC AMP
TP8 REC FM OUT
REC 35 Vp-p
AUDIO ERASE SIG OUT
TP9
TP10 CTL ERASE SIG OUT
REC DC 5.8 V
TP 17 PB Hi-Fi AGC OUT
PB FM OUT
TP16
R160 S REC FM LEVEL
R69 C REC FM LEVEL
BPF 2
BPF 1
Rch 1.8MHz
Lch 1.4MHz
Q14 DTC124EU
REC BIAS TP11
REC BIAS GND TP12
REC START(L)
Q18,Q19 DTC144EU
REC 0.72 Vp-p
From/To 0I S/S CN4
PB 90 mVp-p
REC 1.2 Vp-p
IC3 NJM 2904S
Q101 DTC124TU
Q102 2SA1576(QRS)
IC 102 AN3931NC
R130 LIM LEVEL
Q103 DTC143 TU
Q104 DTC143 TU
Q105 DTA124EU
R136 L REC LEVEL
R142 L PB HI-FI LEVEL
IC102
R141 R REC LEVEL
R149 R PB HI-FI LEVEL
R148 R PB HI-FI LEVEL
R144 L FINE CARRIER
R145 L CARRIER
R143 L PB HI-FI LEVEL
R146 R FINE CARRIER
R148 R CARRIER
TP3 L MOD OUT
TP4 L DEMOD IN
TP5 R DEMOD IN
TP15 R MOD OUT
TP13 REC CH
TP20 GND
TP6 N REC OUT
TP7 N PB LINE AMP IN
R28 N PB LEVEL
R41 R IND LEVEL
R40 L IND LEVEL
AUDIO L OUT TP18
AUDIO R OUT TP19
L EE LEVEL
R EE LEVEL
IC101
IC 101 AN3977C
INPUT SELECT SW
OUTPUT SELECT SW
HiFi PB/REC NORMAL REC/EE/PB
TP14 REC RCH
TP2 L EXT IN
From/To 3I AV JACK
From/To 07 MIC AMP CN701
REC 0.6 Vp-p
PB 0.12 Vp-p
PB 0.1 Vp-p
REC 0.6 Vp-p
PB 70 mVp-p
REC 0.72 Vp-p
REC 0.28 Vp-p
A
B
C
D
E
F
G
H
1
2
3
4
5
6

## 5.17 AUDIO CIRCUIT BOARD

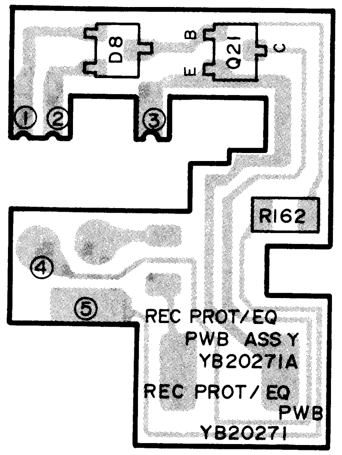
— Rear —
(B)


C
B
A
TP8
REC FM OUT
R40
L IND LEVEL
R41
R IND LEVEL
TP16
PB FM OUT
TP17
PB Hi-Fi AGC OUT
TP18
AUDIO L OUT
TP19
AUDIO R OUT
TP2
L EXT IN
R160
S REC FM LEVEL
TP1
GND
R69
C REC FM LEVEL
TP11
REC BIAS
TP9
AUDIO ERASE SIG OUT
TP7
N PB LINE AMP IN
R9
BIAS LEVEL
R28
N PB LEVEL
TP14
REC RCH
TP12
REC BIAS GND
R130
LIM LEVEL
TP10
CTL ERASE
SIG OUT
R115
R EE LEVEL
TP6
N REC OUT
R147
R CARRIER
R112
L EE LEVEL
R148
R PB Hi-Fi LEVEL
R146
R FINE CARRIER
R149
R PB Hi-Fi LEVEL
R145
L CARRIER
TP15
R MOD OUT
R144
L FINE CARRIER
TP5
R DEMOD IN
R141
R REC LEVEL
R143
L PB Hi-Fi LEVEL
TP4
L DEMOD IN
TP20
GND
R142
L PB Hi-Fi LEVEL
R136
L REC LEVEL
TP13
REC LCH
TP3
L MOD OUT
1
2
3
4
5
6
7
REC PROT/EQ
PWB ASSY
AUDIO PWB

— Front —
(A)

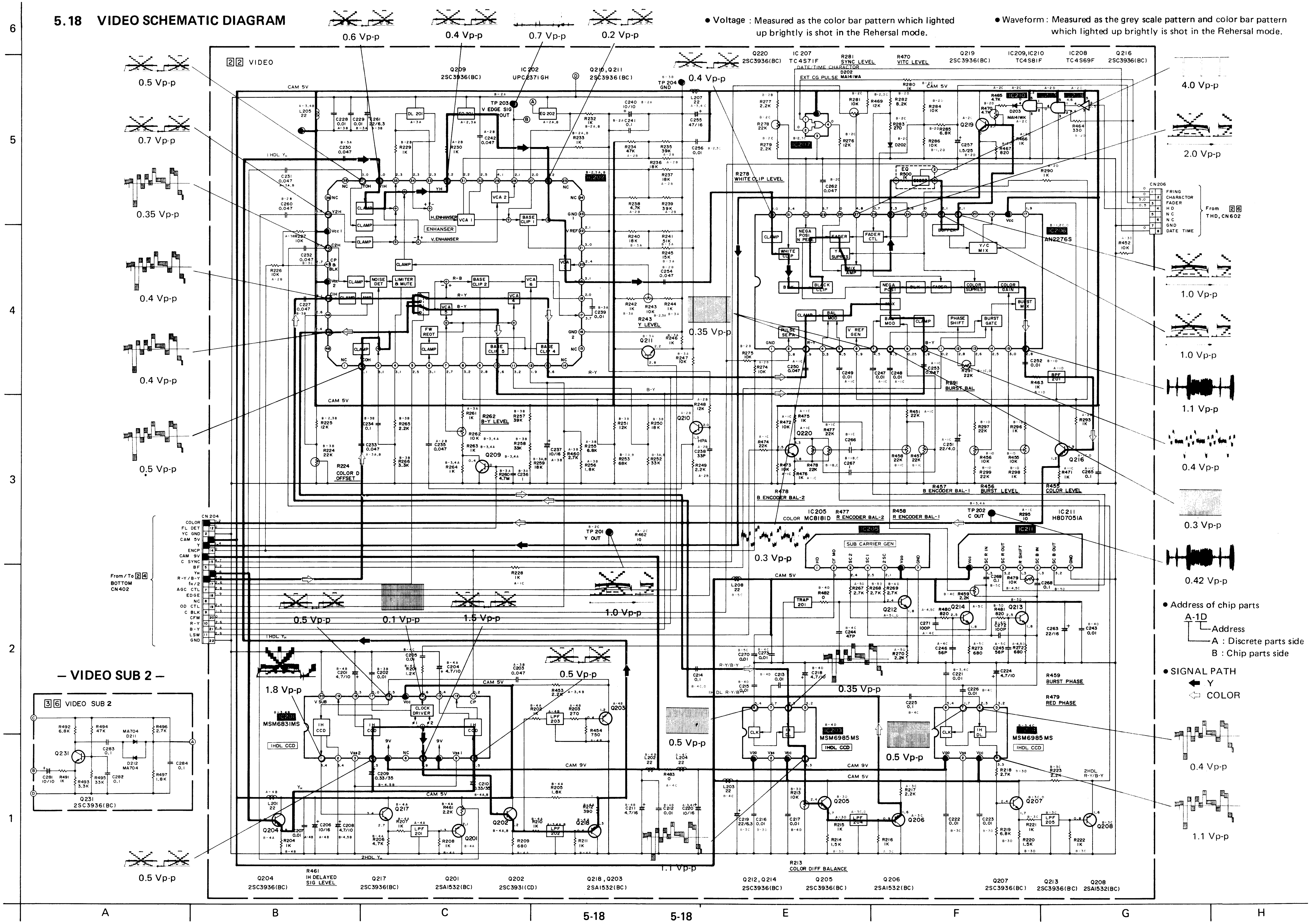

A
B
C
1
2
3
4
5
6
7
CN1
CN3
L4
L7
C18

— REC PROT/EQ —


D8
Q21
E
B
C
①
②
③
④
⑤
R162
REC PROT/EQ
PWB ASSY
YB20271A
REC PROT/ EQ
PWB
YB20271

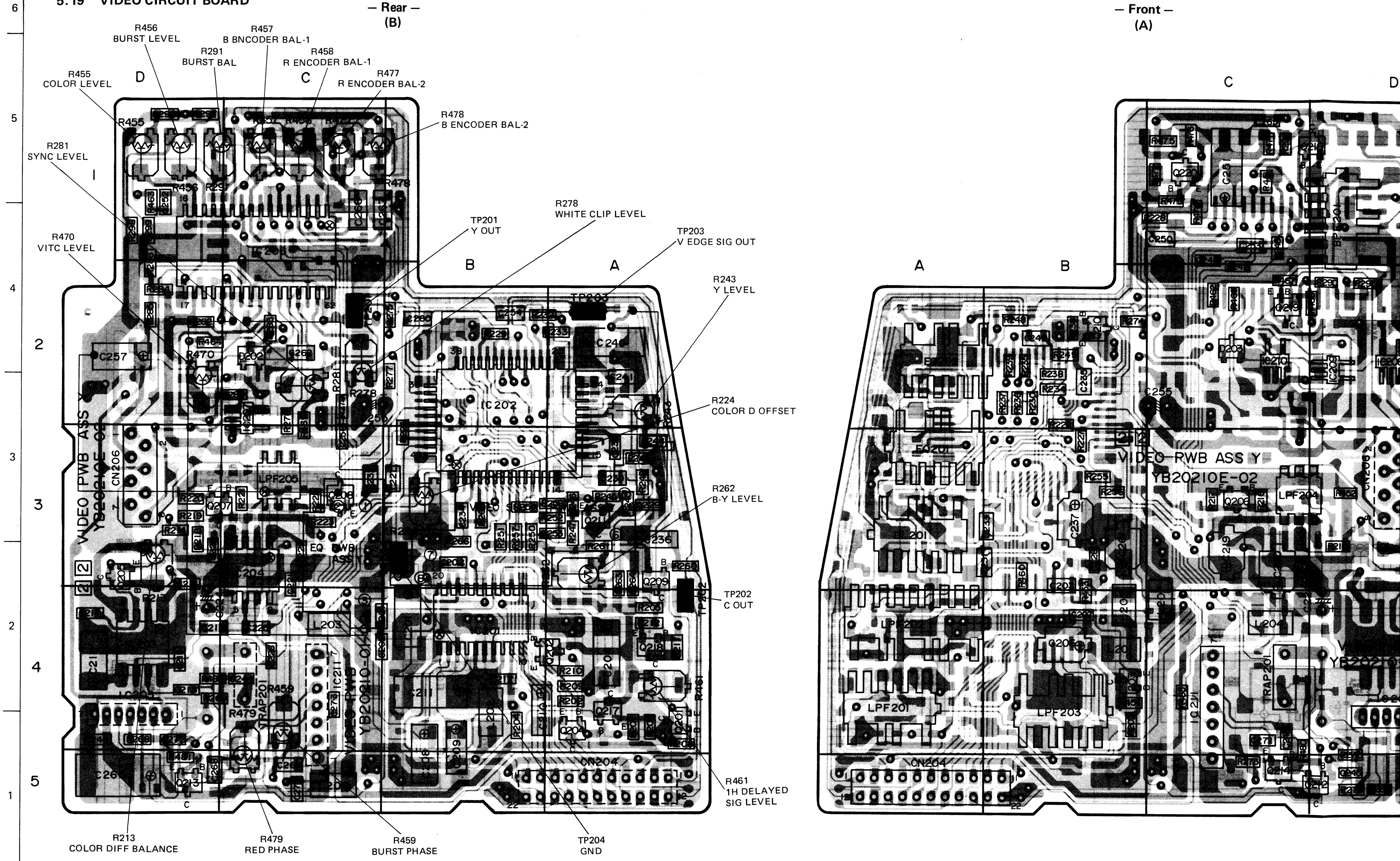
## 5.18 VIDEO SCHEMATIC DIAGRAM

- Voltage : Measured as the color bar pattern which lighted up brightly is shot in the Rehersal mode.
- Waveform : Measured as the grey scale pattern and color bar pattern which lighted up brightly is shot in the Rehersal mode.

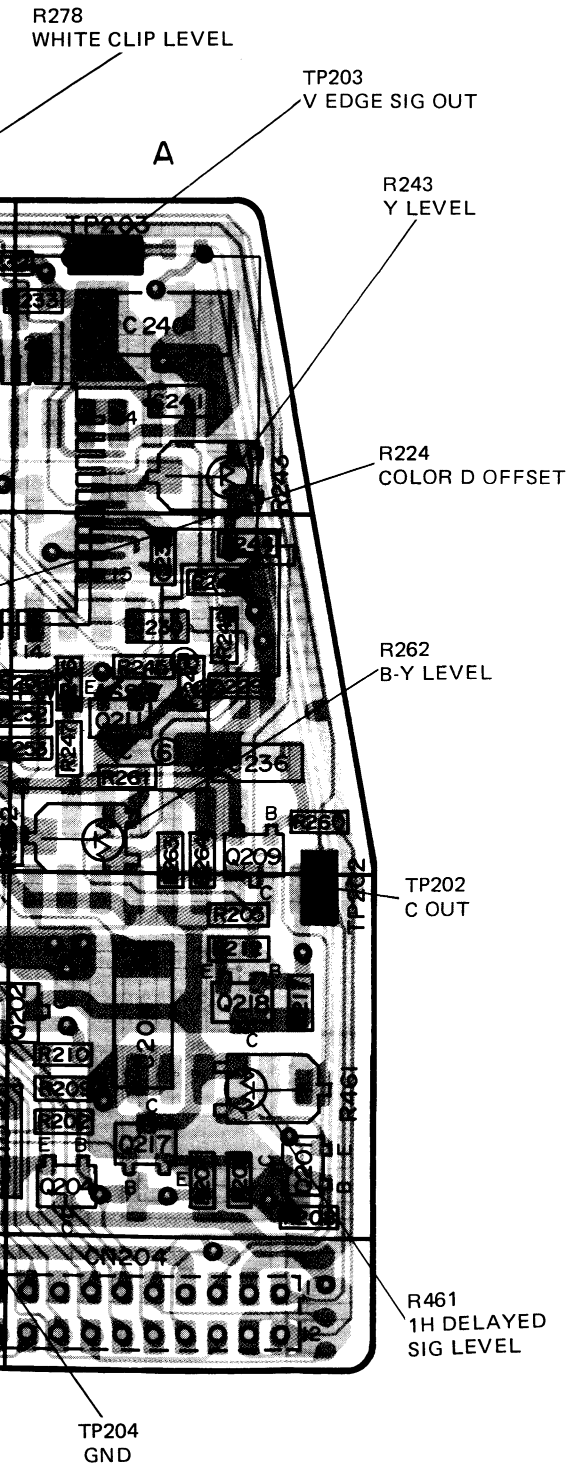

6
5
4
3
2
1
A
B
C
D
E
F
G
H
0.6 Vp-p
0.4 Vp-p
0.7 Vp-p
0.2 Vp-p
0.5 Vp-p
0.7 Vp-p
0.35 Vp-p
0.4 Vp-p
0.4 Vp-p
0.5 Vp-p
22 VIDEO
CAM 5V
Q209 2SC3936(BC)
IC202 UPC2371GH
Q210, Q211 2SC3936(BC)
TP 203 V EDGE SIG OUT
TP 204 GND
0.4 Vp-p
Q220 2SC3936(BC)
IC 207 TC4S71F
R281 SYNC LEVEL
R470 VITC LEVEL
Q219 2SC3936(BC)
IC209, IC210 TC4S81F
IC208 TC4S69F
Q216 2SC3936(BC)
DATE/TIME CHARACTOR
EXT CG PULSE
D202 MA141WA
D203 MA141WK
4.0 Vp-p
2.0 Vp-p
DL 201
EQ 201
EQ 202
CLAMP
VCA 1
VCA 2
VCA 3
VCA 4
VCA 5
VCA 6
H.ENHANSER
ENHANSER
V.ENHANSER
BASE CLIP 1
BASE CLIP 2
BASE CLIP 4
BASE CLIP 5
NOISE DET
LIMITER & MUTE
FW RECT
V REF
R243 Y LEVEL
R278 WHITE CLIP LEVEL
CN206
FRING
CHARACTOR
FADER
HD
NC
NC
GND
DATE TIME
From 26 THD, CN602
AN2276S
NEGA POSI IN PEAK
FADER
FADER CTL
WHITE CLIP
Y SUPRESS
MIX AMP
Y/C MIX
BLACK CLIP
NEGA POSI
BLK
COLOR SUPRESS
COLOR GAIN
BURST MIX
PULSE SEPA
BAL MOD
V REF GEN
PHASE SHIFT
BURST GATE
BPF 201
1.0 Vp-p
1.0 Vp-p
0.35 Vp-p
R291 BURST BAL
1.1 Vp-p
0.4 Vp-p
0.3 Vp-p
0.42 Vp-p
R262 B-Y LEVEL
R224 COLOR D OFFSET
Q220
Q216
R478 B ENCODER BAL-2
R457 B ENCODER BAL-1
R456 BURST LEVEL
R455 COLOR LEVEL
IC205 COLOR MC6818ID
R477 R ENCODER BAL-2
R458 R ENCODER BAL-1
TP202 C OUT
IC211 H8D7051A
SUB CARRIER GEN
TP 201 Y OUT
0.3 Vp-p
CN 204
COLOR
FL DET
YC GND
CAM 5V
Y
ENCP
CAM 9V
C SYNC
BF
R-Y/B-Y
YH
fH/2
AGC CTL
EDGE
NC
OD CTL
C BLK
CFM
R-Y
B-Y
LSW
GND
From/To 24 BOTTOM CN402
1.0 Vp-p
0.5 Vp-p
0.1 Vp-p
1.5 Vp-p
TRAP 201
1.8 Vp-p
IC201 MSM6831MS
1HDL CCD
CLOCK DRIVER
0.5 Vp-p
LPF 203
LPF 201
LPF 202
LPF 204
LPF 205
0.35 Vp-p
0.5 Vp-p
0.5 Vp-p
IC203 MSM6985MS
IC204 MSM6985MS
1HDL CCD
R213 COLOR DIFF BALANCE
R459 BURST PHASE
R479 RED PHASE
2HDL R-Y/B-Y
0.4 Vp-p
1.1 Vp-p
1.1 Vp-p
0.5 Vp-p
Q204 2SC3936(BC)
R461 1H DELAYED SIG LEVEL
Q217 2SC3936(BC)
Q201 2SA1532(BC)
Q202 2SC3931(CD)
Q218, Q203 2SA1532(BC)
Q212, Q214 2SC3936(BC)
Q205 2SC3936(BC)
Q206 2SA1532(BC)
Q207 2SC3936(BC)
Q213 2SC3936(BC)
Q208 2SA1532(BC)
- VIDEO SUB 2 -
36 VIDEO SUB 2
Q231 2SC3936(BC)
MA704 D211
D212 MA704

- Address of chip parts
  A-1D
  - Address
  - A : Discrete parts side
  - B : Chip parts side
- SIGNAL PATH
  - ⬅ Y
  - ⇦ COLOR

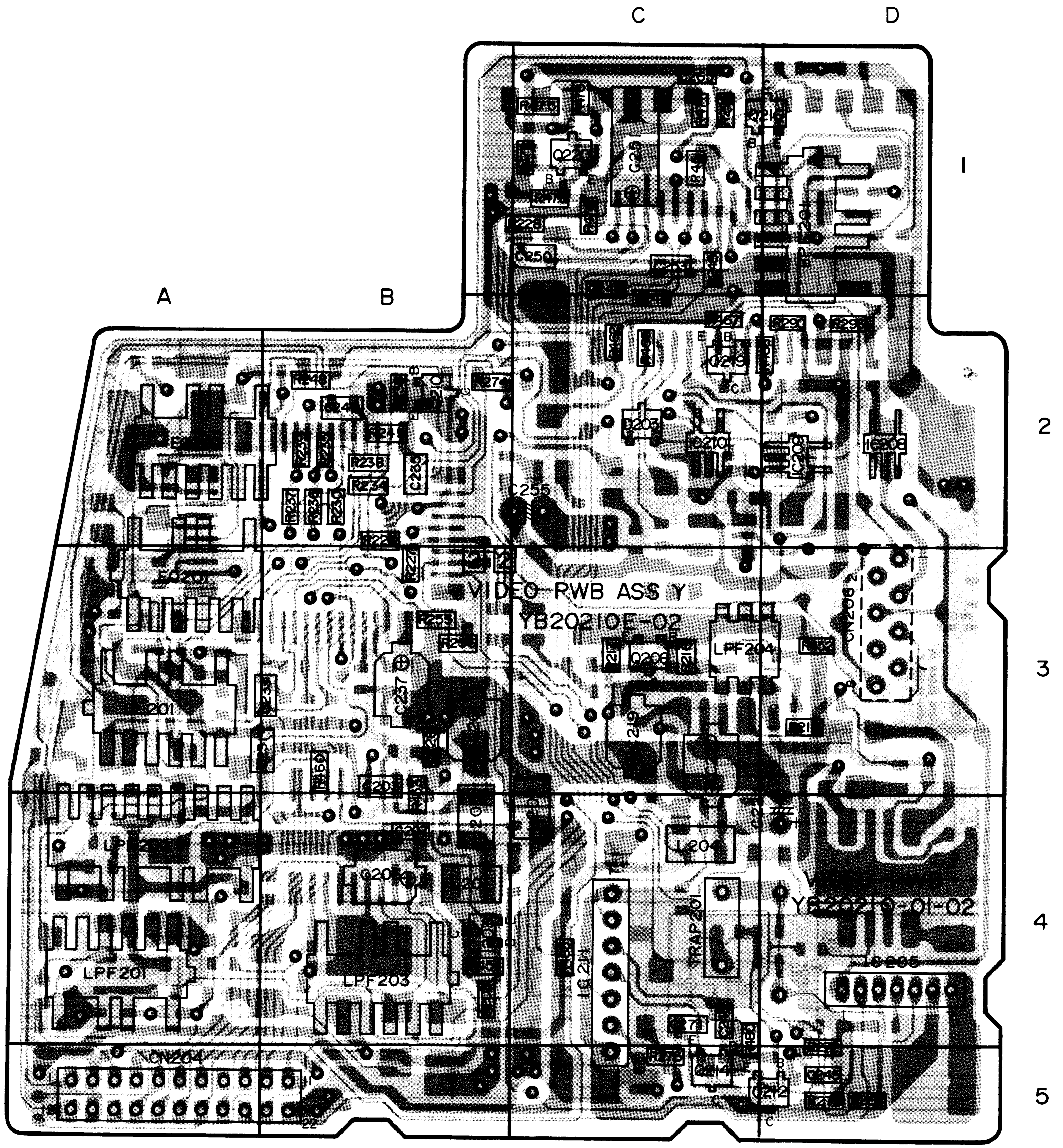
## 5.19 VIDEO CIRCUIT BOARD



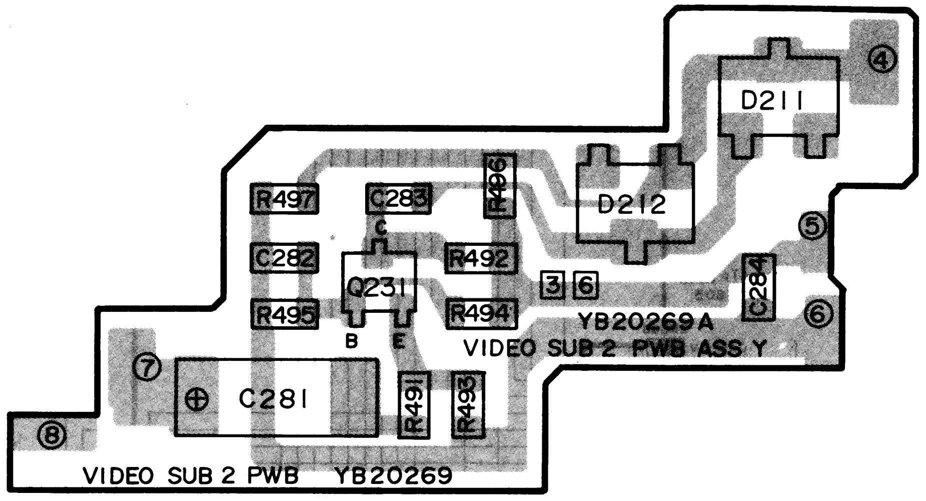
— Rear —
(B)
— Front —
(A)
R456
BURST LEVEL
R457
B BNCODER BAL-1
R291
BURST BAL
R458
R ENCODER BAL-1
R455
COLOR LEVEL
R477
R ENCODER BAL-2
R478
B ENCODER BAL-2
R281
SYNC LEVEL
R278
WHITE CLIP LEVEL
TP201
Y OUT
TP203
V EDGE SIG OUT
R470
VITC LEVEL
R243
Y LEVEL
R224
COLOR D OFFSET
R262
B-Y LEVEL
TP202
C OUT
R461
1H DELAYED
SIG LEVEL
R213
COLOR DIFF BALANCE
R479
RED PHASE
R459
BURST PHASE
TP204
GND
VIDEO PWB ASS Y
YB20210E-02


R278
WHITE CLIP LEVEL
TP203
V EDGE SIG OUT
A
R243
Y LEVEL
R224
COLOR D OFFSET
R262
B-Y LEVEL
TP202
C OUT
R461
1H DELAYED
SIG LEVEL
TP204
GND
CN204

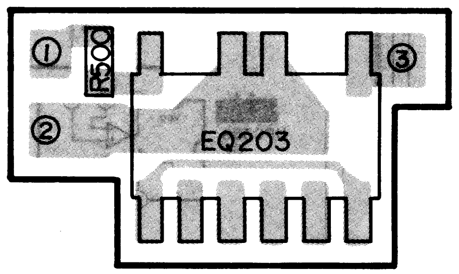
— Front —
(A)


C
D
A
B
I
2
3
4
5
VIDEO PWB ASS Y
YB20210E-02
VIDEO PWB
YB20210-01-02
LPF201
LPF203
LPF204
TRAP201
CN204
CN202
IC205
IC206
IC209
IC210
EQ201

## — VIDEO SUB 2 —


D211
D212
C281
Q231
R491
R492
R493
R494
R495
R496
R497
C282
C283
C284
YB20269A
VIDEO SUB 2 PWB ASS Y
VIDEO SUB 2 PWB YB20269

## — EQ —

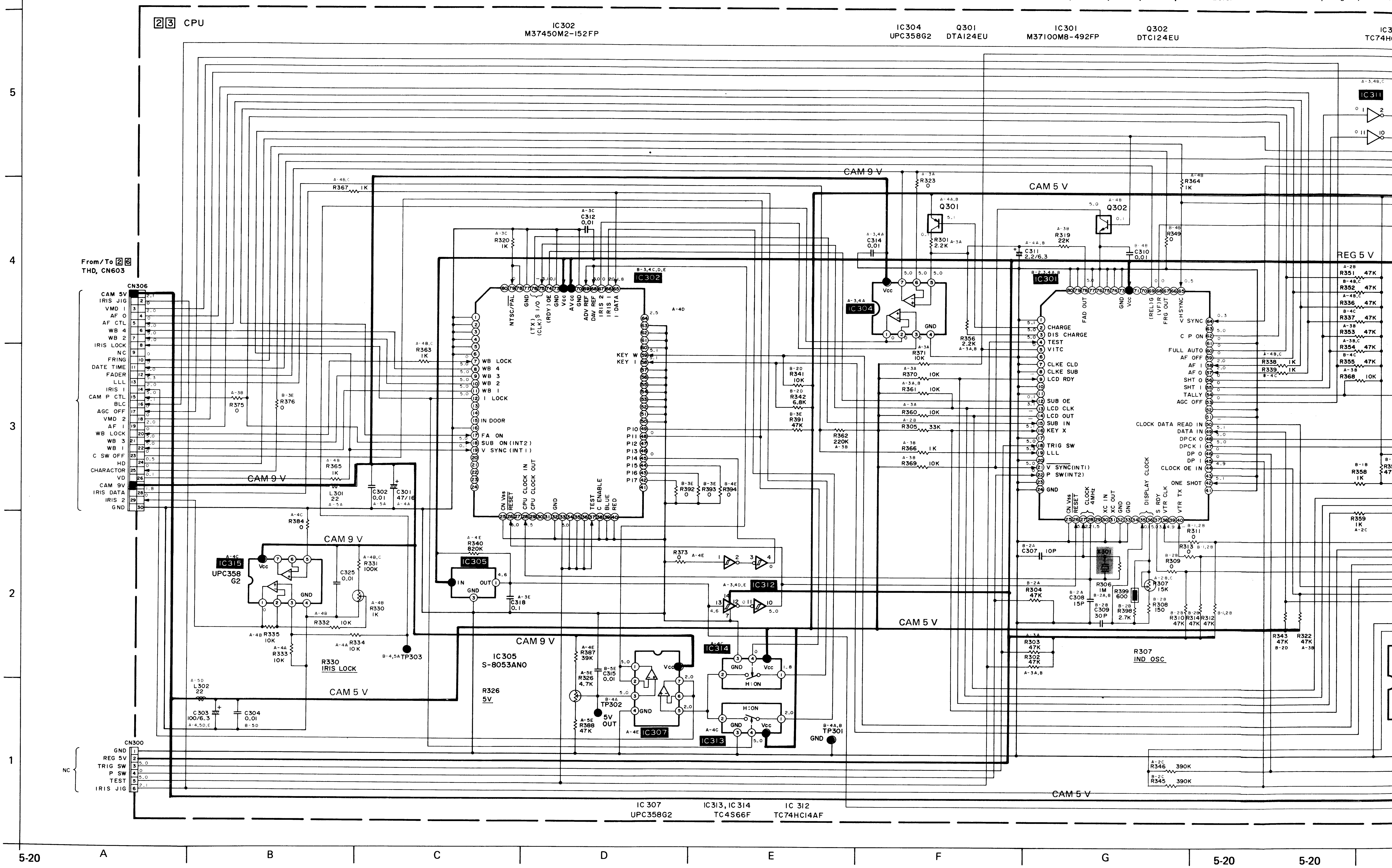

EQ203
R500
①
②
③

EQ PWB ASS Y YB20272A-C
EQ PWB YB20272

## 5.20 CPU & BATTERY SCHEMATIC DIAGRAMS

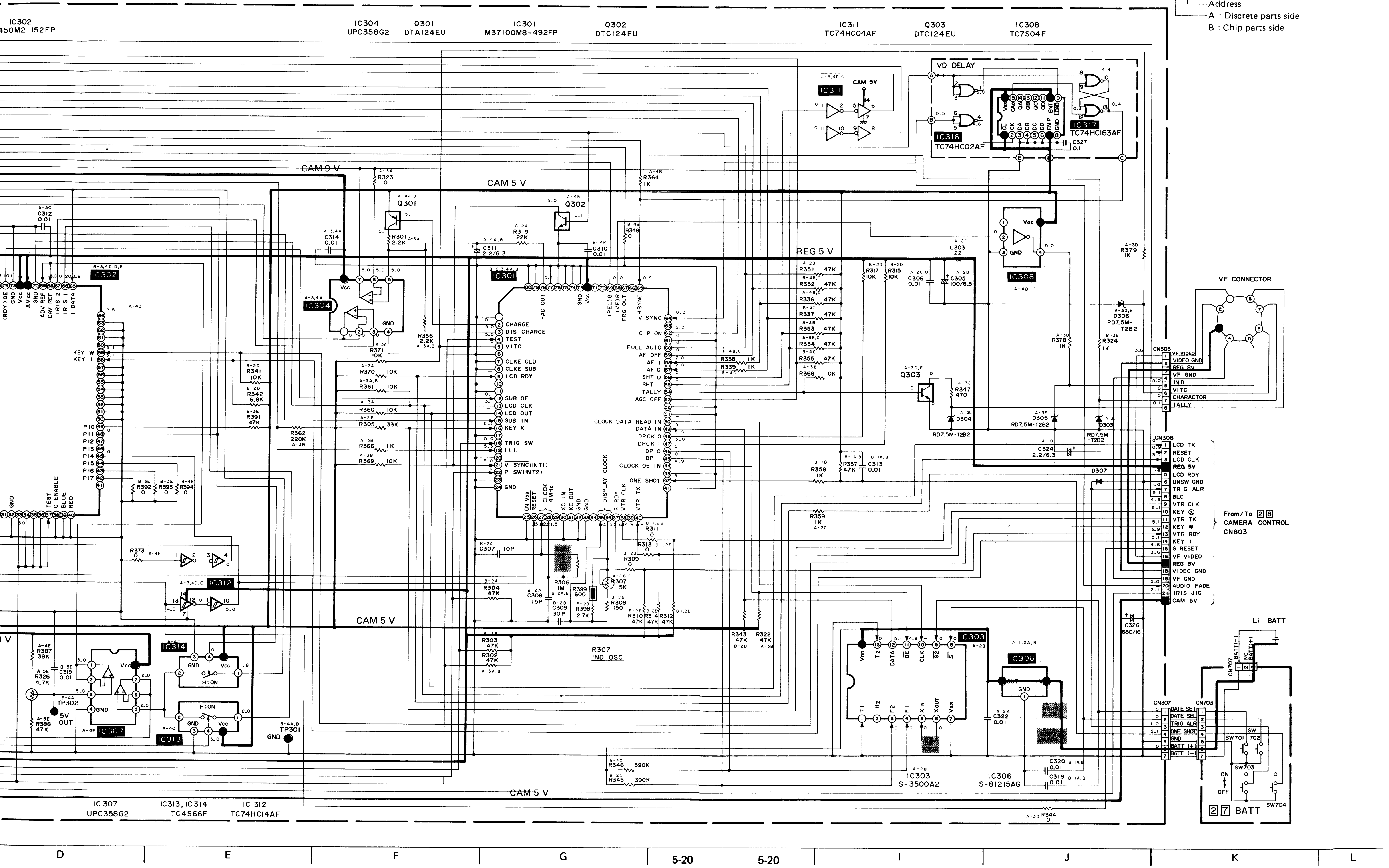
● Shaded (▨) parts are critical for safety.
Replace only with specified part numbers.

● Voltage : Measured as the co
up brightly is shot



2 3 CPU
IC302
M37450M2-152FP
IC304
UPC358G2
Q301
DTA124EU
IC301
M37100M8-492FP
Q302
DTC124EU
IC3
TC74H
IC311
From/To 2 6
THD, CN603
CN306
CAM 5V
IRIS JIG
VMD I
AF O
AF CTL
WB 4
WB 2
IRIS LOCK
NC
FRING
DATE TIME
FADER
LLL
IRIS I
CAM P CTL
BLC
AGC OFF
VMD 2
AF I
WB LOCK
WB 3
WB I
C SW OFF
HD
CHARACTOR
VD
CAM 9V
IRIS DATA
IRIS 2
GND
CN300
GND
REG 5V
TRIG SW
P SW
TEST
IRIS JIG
NC
CAM 9 V
CAM 5 V
REG 5 V
R367 1K
R363 1K
R375 0
R376 0
R365 1K
L301 22
C302 0.01
C301 47/16
R384 0
IC315
UPC358 G2
Vcc
GND
C325 0.01
R331 100K
R330 1K
R332 10K
R335 10K
R333 10K
R334 10K
TP303
R330 IRIS LOCK
L302 22
C303 100/6.3
C304 0.01
R320 1K
C312 0.01
NTSC/PAL
GND
(TX) S I/O
(CLK)
(RDY) IOE
GND
AVcc
GND
ADV REF
DAV REF
IRIS 2
IRIS I
I DATA
WB LOCK
WB 4
WB 3
WB 2
WB I
I LOCK
IN DOOR
FA ON
SUB ON (INT2)
V SYNC (INT1)
KEY W
KEY I
P10
P11
P12
P13
P14
P15
P16
P17
CN Vss
RESET
CPU CLOCK IN
CPU CLOCK OUT
GND
TEST
C ENABLE
BLUE
RED
R340 820K
IC305
IN
OUT
GND
C318 0.1
R373 0
IC312
IC305
S-8053ANO
R326
5V
R387 39K
R326 4.7K
C315 0.01
TP302
5V OUT
R388 47K
IC307
IC314
IC313
H:ON
TP301
GND
R392 0
R393 0
R394 0
R341 10K
R342 6.8K
R391 47K
R362 220K
R323 0
Q301
R301 2.2K
C314 0.01
IC304
R356 2.2K
R371 10K
R370 10K
R361 10K
R360 10K
R305 33K
R366 1K
R369 10K
R319 22K
Q302
C311 2.2/6.3
C310 0.01
R349 0
R364 1K
IC301
CHARGE
DIS CHARGE
TEST
VITC
CLKE CLD
CLKE SUB
LCD RDY
SUB OE
LCD CLK
LCD OUT
SUB IN
KEY X
TRIG SW
LLL
V SYNC(INT1)
P SW(INT2)
GND
FAD OUT
(REL)G
(VFIR)
FRG OUT
V HSYNC
V SYNC
C P ON
FULL AUTO
AF OFF
AF I
AF O
SHT O
SHT I
TALLY
AGC OFF
CLOCK DATA READ IN
DATA IN
DPCK O
DPCK I
DP O
DP I
CLOCK OE IN
ONE SHOT
DISPLAY CLOCK
CN Vss
RESET
CLOCK 4MHz
XC IN
XC OUT
S RDY
VTR CLK
VTR TX
R311 0
R313 0
R309 0
C307 10P
X301
R304 47K
R306 1M
C308 15P
C309 30P
R399 600
R398 2.7K
R307 15K
R308 150
R310 47K
R314 47K
R312 47K
R303 47K
R302 47K
R307 IND OSC
R346 390K
R345 390K
R351 47K
R352 47K
R336 47K
R337 47K
R353 47K
R354 47K
R355 47K
R368 10K
R338 1K
R339 1K
R358 1K
R359 1K
R343 47K
R322 47K
IC 307
UPC358G2
IC313, IC 314
TC4S66F
IC 312
TC74HC14AF
A
B
C
D
E
F
G
1
2
3
4
5
6

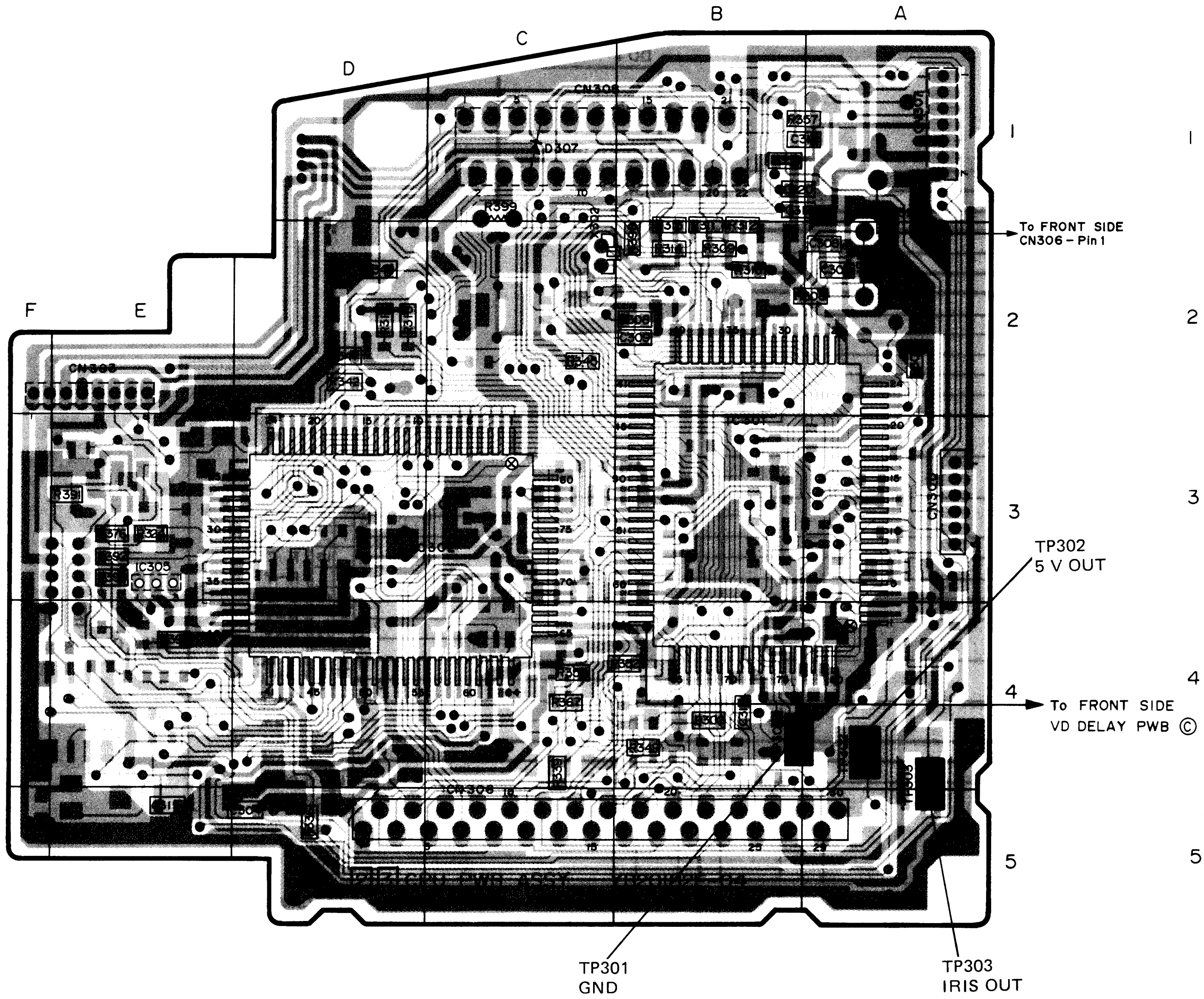
- Shaded (▨) parts are critical for safety. Replace only with specified part numbers.
- Voltage : Measured as the color bar pattern which lighted up brightly is shot in the Rehersal mode.
- Address of chip parts
  A-1D
  Address
  A : Discrete parts side
  B : Chip parts side



IC302
450M2-152FP
IC304
UPC358G2
Q301
DTA124EU
IC301
M37100M8-492FP
Q302
DTC124EU
IC311
TC74HC04AF
Q303
DTC124EU
IC308
TC7S04F
VD DELAY
IC316
TC74HC02AF
IC317
TC74HC163AF
CAM 9 V
CAM 5 V
REG 5 V
CAM 5V
CHARGE
DIS CHARGE
TEST
VITC
CLKE CLD
CLKE SUB
LCD RDY
SUB OE
LCD CLK
LCD OUT
SUB IN
KEY X
TRIG SW
LLL
V SYNC(INT1)
P SW(INT2)
GND
V SYNC
C P ON
FULL AUTO
AF OFF
AF I
AF O
SHT O
SHT I
TALLY
AGC OFF
CLOCK DATA READ IN
DATA IN
DPCK O
DPCK I
DP O
DP I
CLOCK OE IN
ONE SHOT
DISPLAY CLOCK
S RDY
VTR CLK
VTR TX
CLOCK 4MHz
XC IN
XC OUT
FAD OUT
H SYNC
FRG OUT
VF CONNECTOR
CN303
VF VIDEO
VIDEO GND
REG 8V
VF GND
IND
VITC
CHARACTOR
TALLY
CN308
LCD TX
RESET
LCD CLK
REG 5V
LCD RDY
UNSW GND
TRIG ALR
BLC
VTR CLK
KEY Ⓧ
VTR TK
KEY W
VTR RDY
KEY I
S RESET
VF VIDEO
REG 8V
VIDEO GND
VF GND
AUDIO FADE
IRIS JIG
CAM 5V
From/To 28 CAMERA CONTROL CN803
IC303
S-3500A2
IC306
S-81215AG
R307 IND OSC
CN307
CN703
DATE SET
DATE SEL
TRIG ALR
ONE SHOT
GND
BATT (+)
BATT (−)
SW701
702
SW703
SW704
ON
OFF
Li BATT
CN707
27 BATT
5V OUT
TP302
TP301
IC307
UPC358G2
IC313, IC314
TC4S66F
IC 312
TC74HC14AF
H:ON
D
E
F
G
I
J
K
L

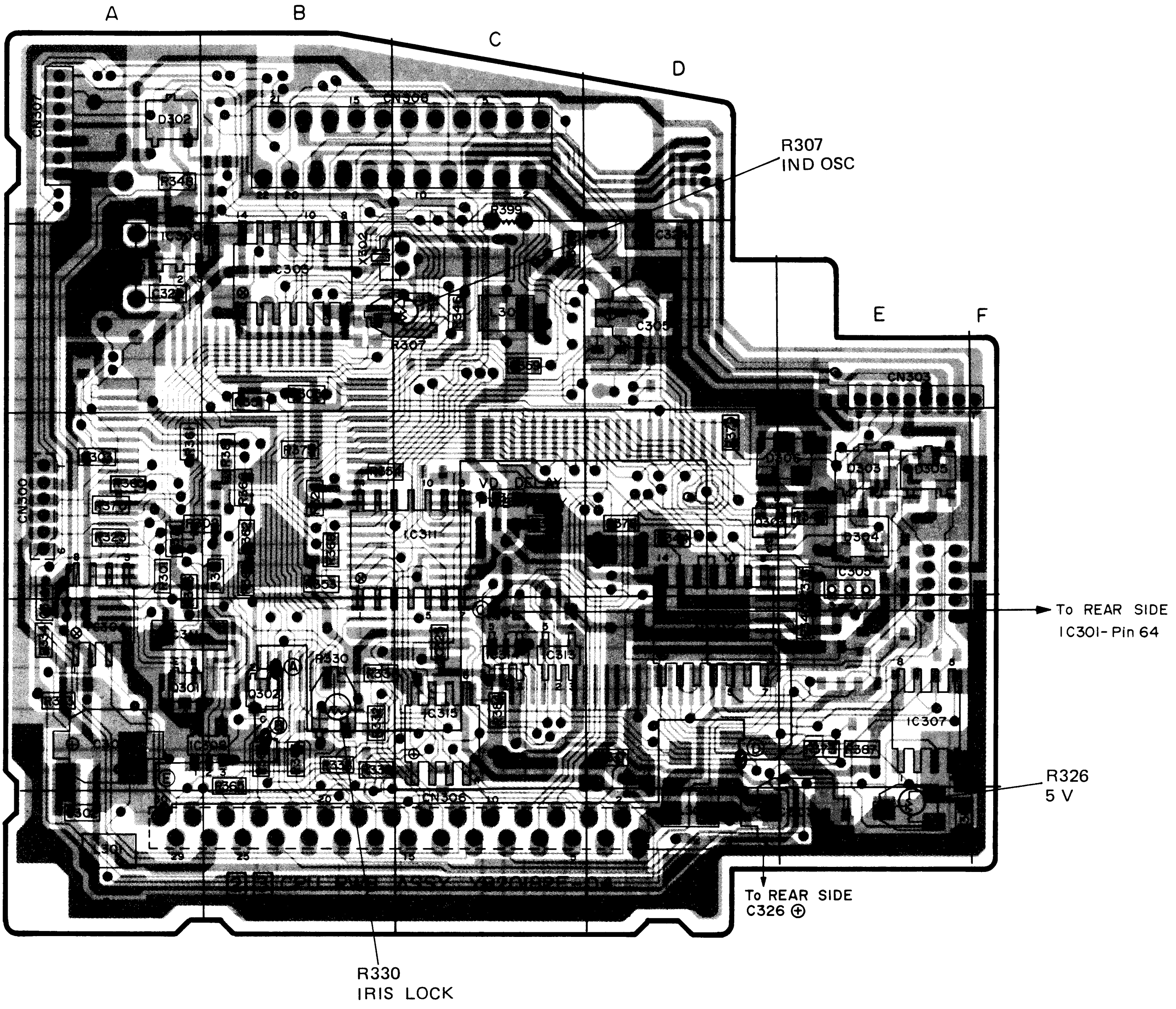
## 5.21 CPU & BATTERY CIRCUIT BOARD

– Rear –
(B)



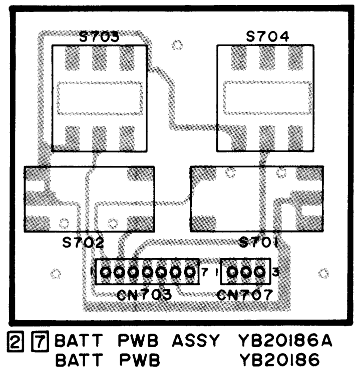
A
B
C
D
E
F
1
2
3
4
5
CN308
CN303
CN307
CN306
IC303
IC301
D307
R399
To FRONT SIDE CN306 – Pin 1
TP302 5 V OUT
To FRONT SIDE VD DELAY PWB Ⓒ
TP301 GND
TP303 IRIS OUT

– Front –
(A)



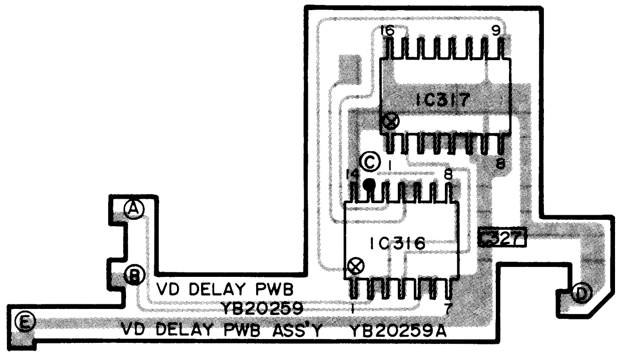
A
B
C
D
E
F
1
2
3
4
5
CN307
CN308
CN303
CN306
D302
IC311
IC315
IC307
IC305
R307 IND OSC
To REAR SIDE IC301- Pin 64
R326 5 V
To REAR SIDE C326 ⊕
R330 IRIS LOCK

– BATTERY –



S703
S704
S702
S701
CN703
CN707
2 7 BATT PWB ASSY YB20186A
BATT PWB YB20186

– VD DELAY –

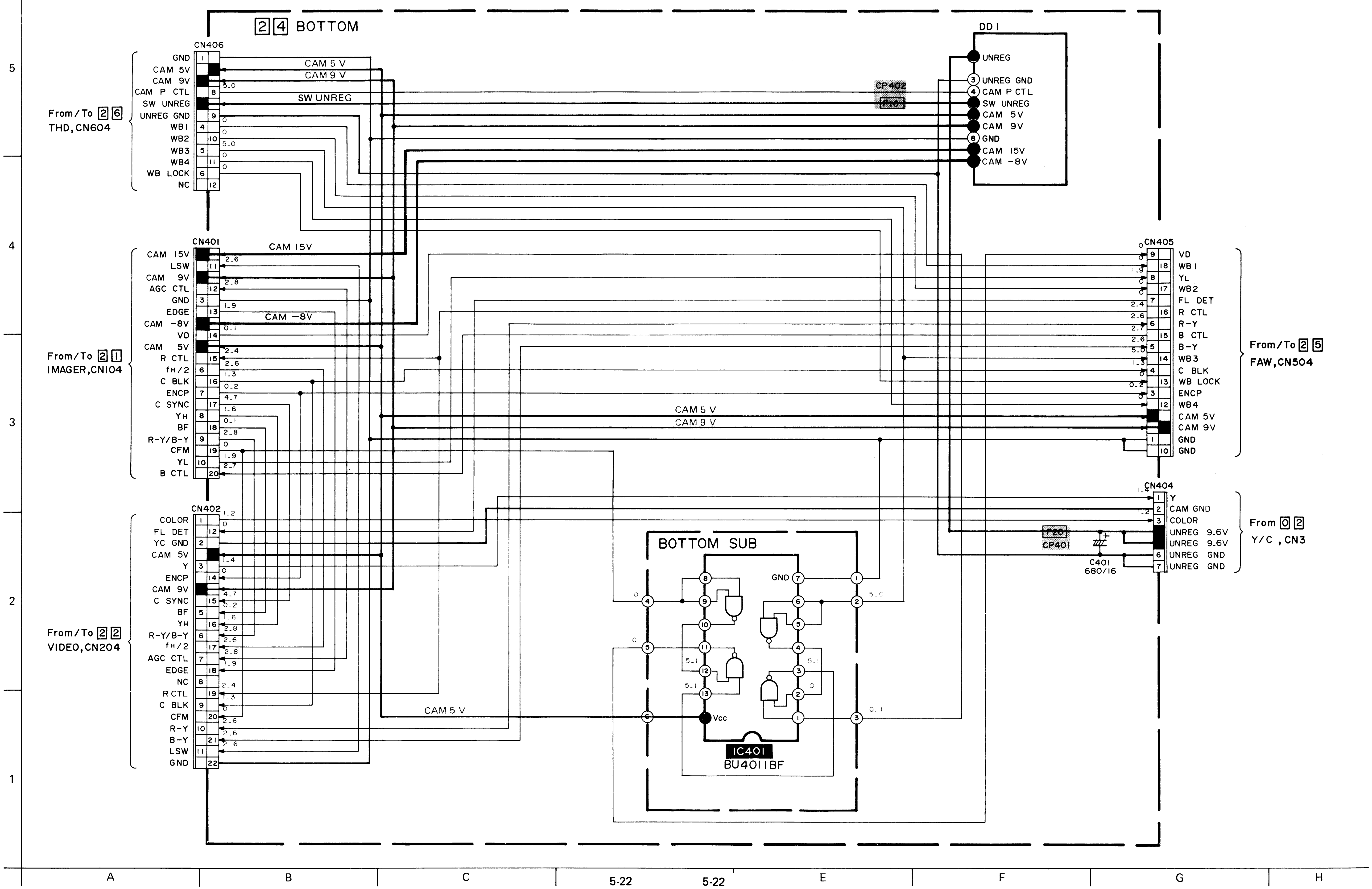


IC317
IC316
C327
Ⓐ
Ⓑ
Ⓒ
Ⓓ
Ⓔ
VD DELAY PWB YB20259
VD DELAY PWB ASS'Y YB20259A

## 5.22 BOTTOM SCHEMATIC DIAGRAM

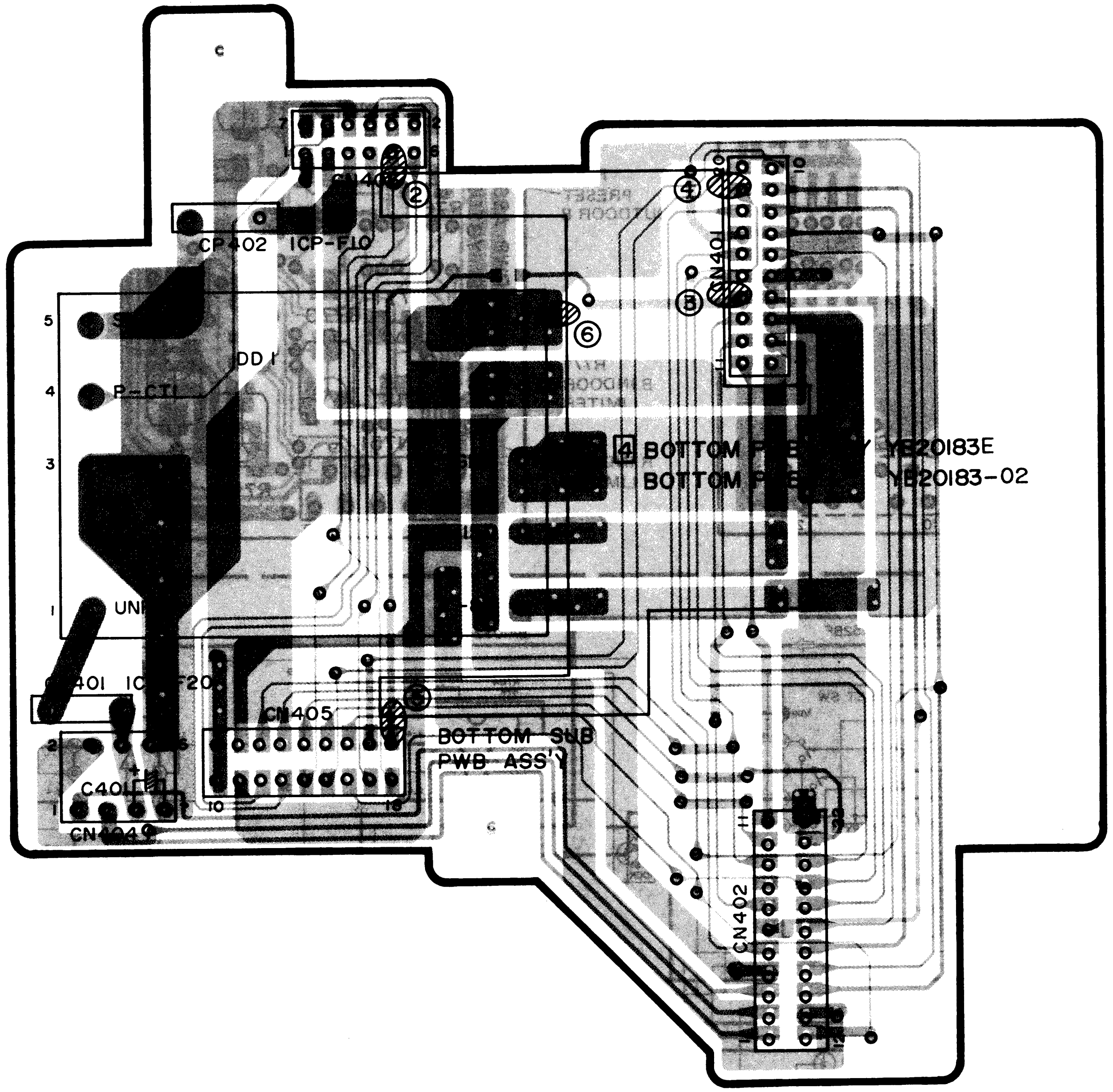
- Shaded (▨) parts are critical for safety.
  Replace only with specified part numbers.

- Voltage : Measured as the color bar pattern which lighted up brightly is shot in the Rehersal mode.

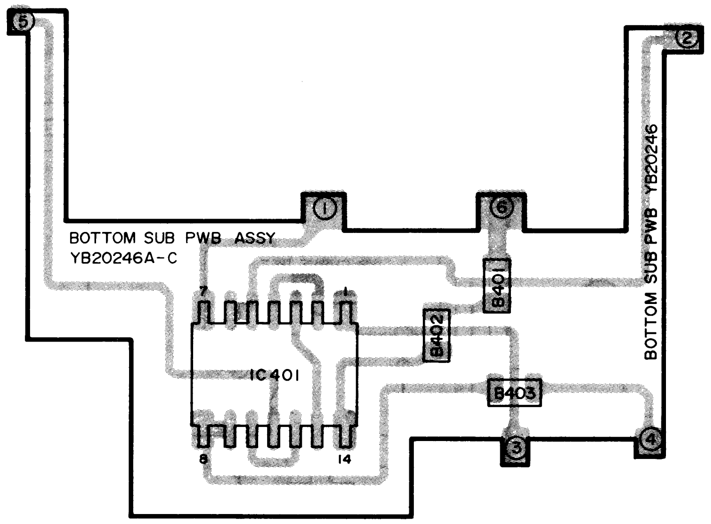


24 BOTTOM
From/To 26 THD,CN604
CN406
GND
CAM 5V
CAM 9V
CAM P CTL
SW UNREG
UNREG GND
WB1
WB2
WB3
WB4
WB LOCK
NC
CAM 5 V
CAM 9 V
SW UNREG
CP402
F10
DD1
UNREG
UNREG GND
CAM P CTL
SW UNREG
CAM 5V
CAM 9V
GND
CAM 15V
CAM -8V
From/To 21 IMAGER,CN104
CN401
CAM 15V
LSW
CAM 9V
AGC CTL
GND
EDGE
CAM -8V
VD
CAM 5V
R CTL
fH/2
C BLK
ENCP
C SYNC
YH
BF
R-Y/B-Y
CFM
YL
B CTL
CAM 15V
CAM -8V
CN405
VD
WB1
YL
WB2
FL DET
R CTL
R-Y
B CTL
B-Y
WB3
C BLK
WB LOCK
ENCP
WB4
CAM 5V
CAM 9V
GND
GND
From/To 25 FAW,CN504
CAM 5 V
CAM 9 V
From/To 22 VIDEO,CN204
CN402
COLOR
FL DET
YC GND
CAM 5V
Y
ENCP
CAM 9V
C SYNC
BF
YH
R-Y/B-Y
fH/2
AGC CTL
EDGE
NC
R CTL
C BLK
CFM
R-Y
B-Y
LSW
GND
CN404
Y
CAM GND
COLOR
UNREG 9.6V
UNREG 9.6V
UNREG GND
UNREG GND
From 02 Y/C , CN3
F20
CP401
C401 680/16
BOTTOM SUB
GND
Vcc
IC401
BU4011BF
CAM 5 V
A
B
C
E
F
G
H
1
2
3
4
5
6

## 5.23 BOTTOM CIRCUIT BOARD


CP402
ICP-F10
CN403
②
④
⑤
⑥
CN401
DD1
P-CT1
UNI
5
4
3
1
④ BOTTOM PWB ASS'Y YB20183E
BOTTOM PWB YB20183-02
CP401
ICP-F20
CN405
BOTTOM SUB PWB ASS'Y
C401
CN404
CN402
10
11

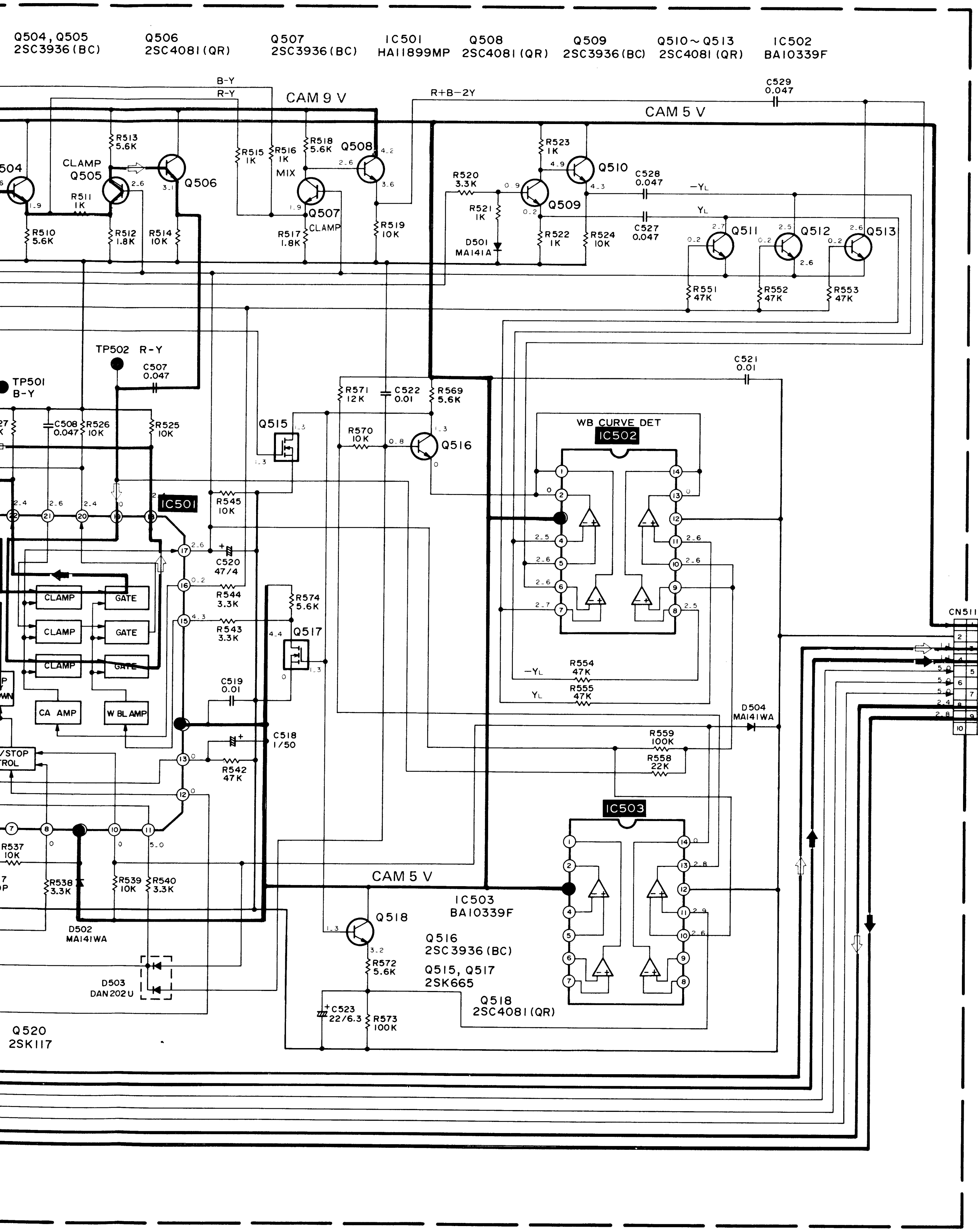
— BOTTOM SUB —


⑤
②
①
⑥
③
④
BOTTOM SUB PWB ASSY
YB20246A-C
BOTTOM SUB PWB YB20246
IC401
R401
R402
R403
7
1
8
14

- Voltage : Measured as the color bar pattern which lighted up brightly is shot in the Rehersal mode.

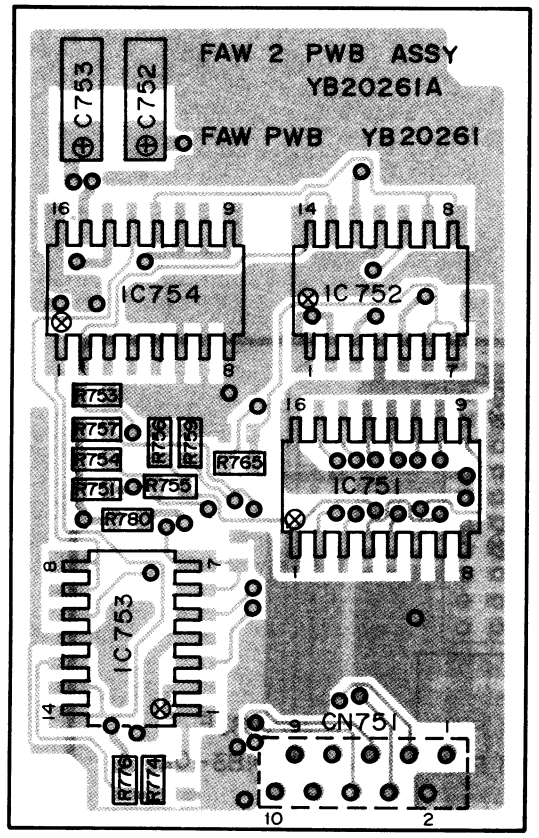
- Address of chip parts A-1D
  - Address
  - A : Discrete parts side
  - B : Chip parts side

- SIGNAL PATH
  - ⬅ B CTL
  - ⇦ R CTL



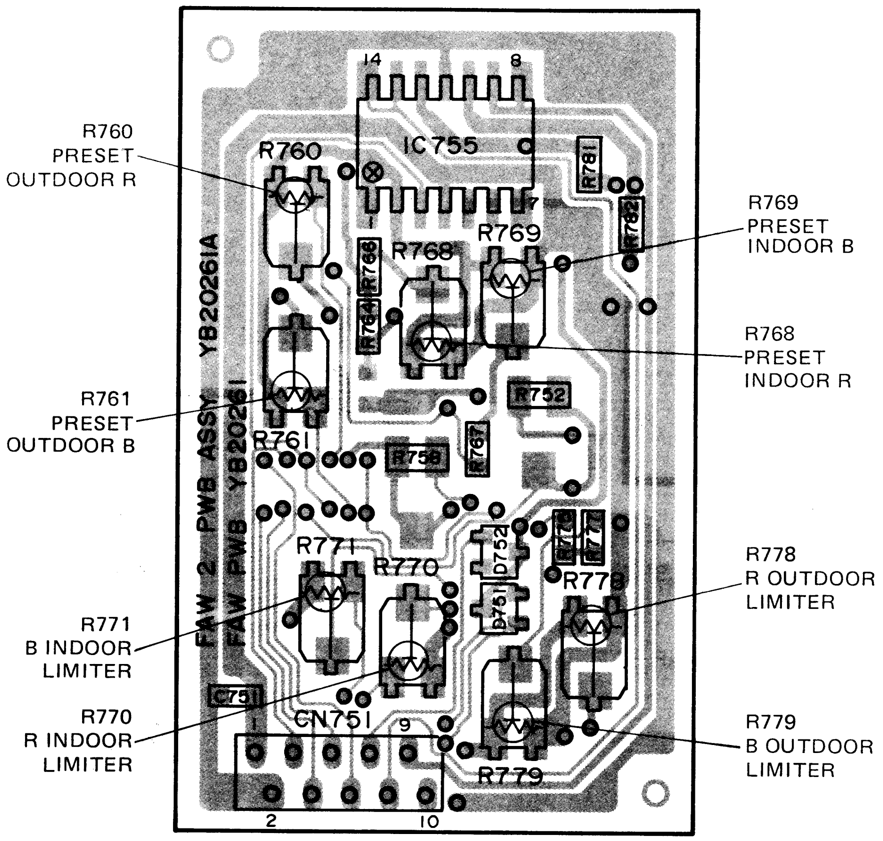
Q504, Q505 2SC3936(BC)
Q506 2SC4081(QR)
Q507 2SC3936(BC)
IC501 HA11899MP
Q508 2SC4081(QR)
Q509 2SC3936(BC)
Q510～Q513 2SC4081(QR)
IC502 BA10339F
CAM 9 V
CAM 5 V
R+B−2Y
B-Y
R-Y
CLAMP Q505
MIX
TP501 B-Y
TP502 R-Y
IC501
CLAMP
GATE
CA AMP
W BL AMP
WB CURVE DET
IC502
IC503
IC503 BA10339F
Q516 2SC3936(BC)
Q515, Q517 2SK665
Q518 2SC4081(QR)
Q520 2SK117
D501 MA141A
D502 MA141WA
D503 DAN202U
D504 MA141WA
CN511

## — Rear —
## (B)

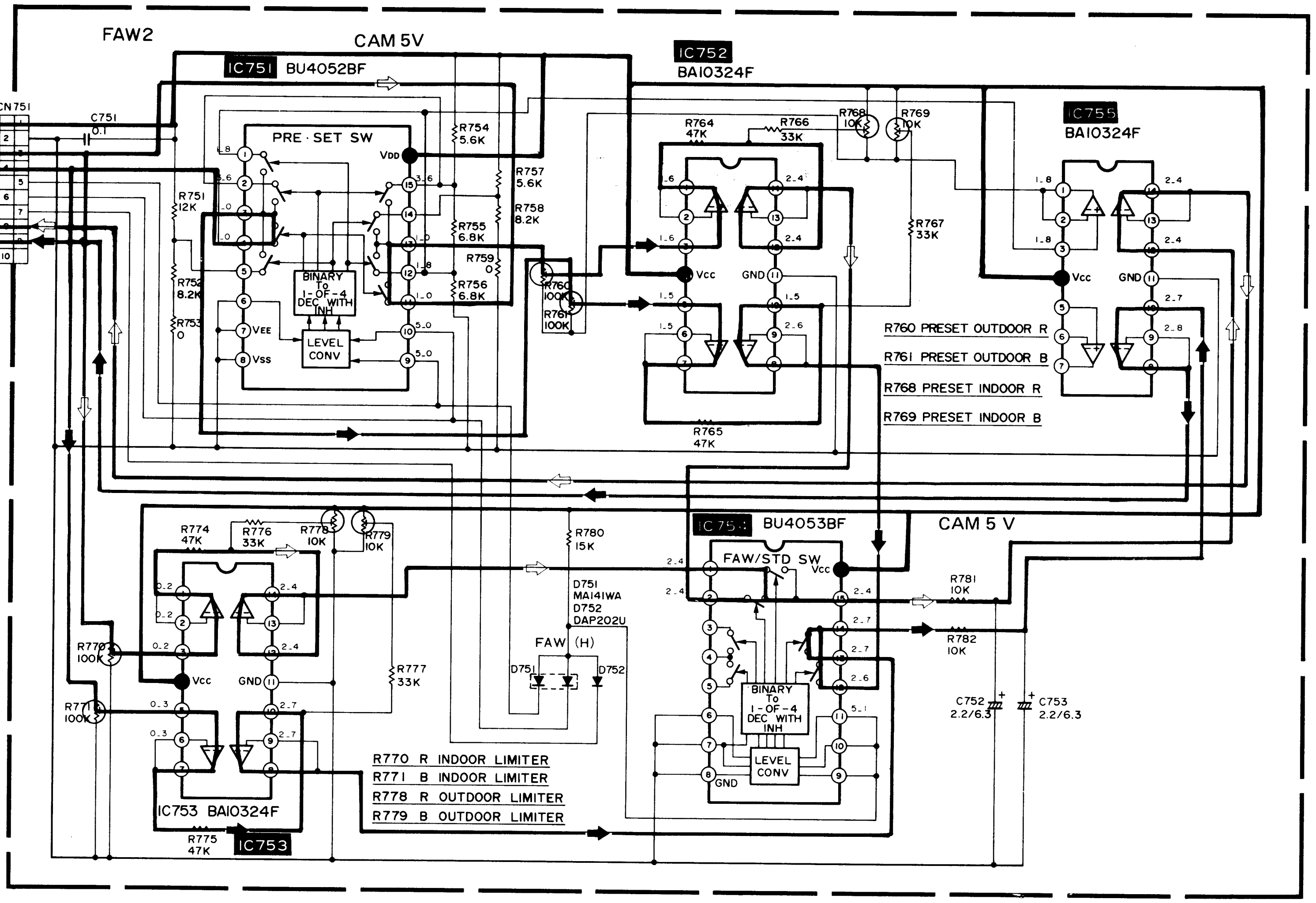


FAW 2 PWB ASSY YB20261A
FAW PWB YB20261
C753
C752
IC754
IC752
IC751
IC753
CN751

## — Front —
## (A)



R760 PRESET OUTDOOR R
R761 PRESET OUTDOOR B
R771 B INDOOR LIMITER
R770 R INDOOR LIMITER
R769 PRESET INDOOR B
R768 PRESET INDOOR R
R778 R OUTDOOR LIMITER
R779 B OUTDOOR LIMITER
IC755
CN751
FAW 2 PWB ASSY YB20261A
FAW PWB YB20261

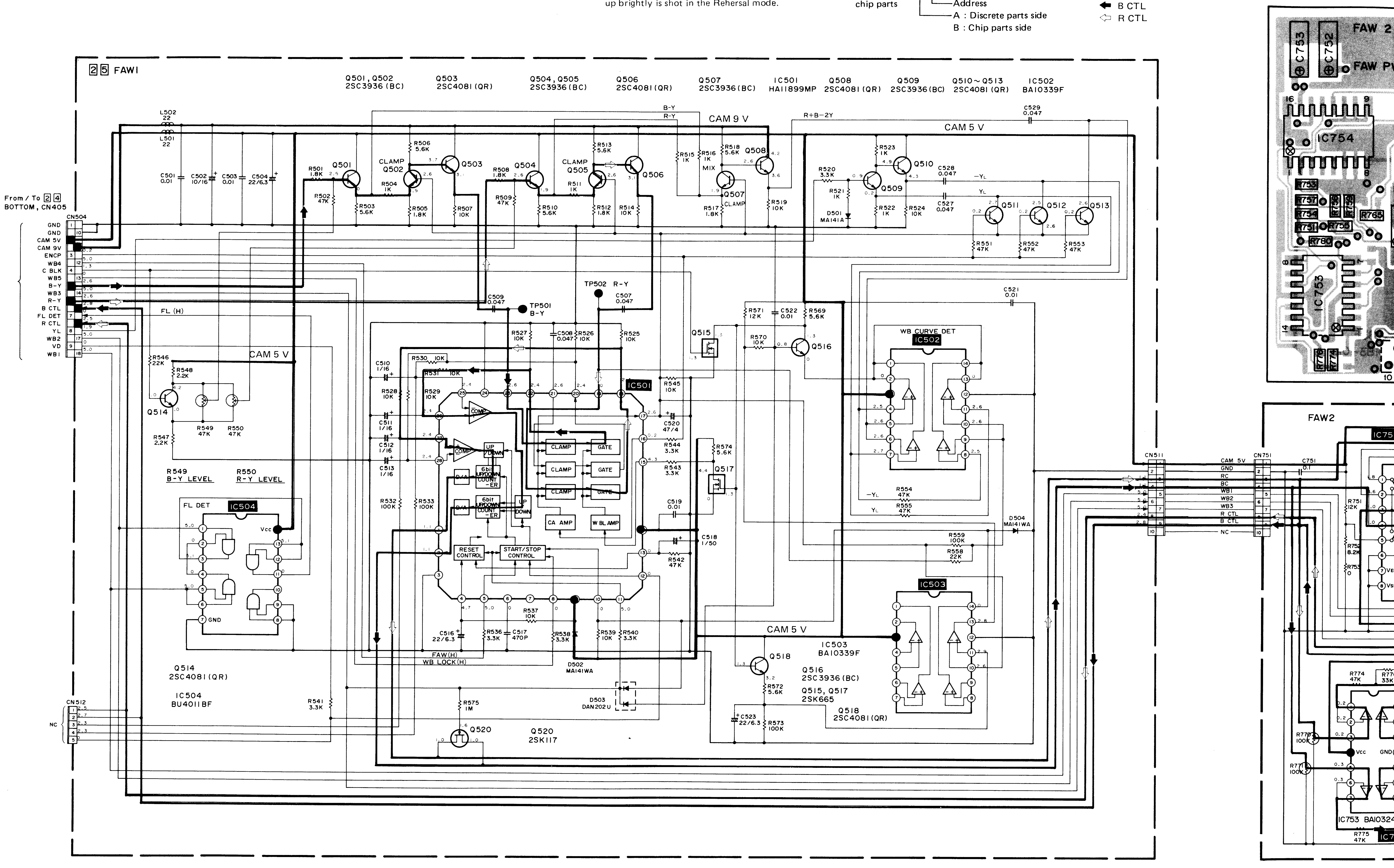


FAW2
CAM 5V
IC751 BU4052BF
IC752 BA10324F
IC755 BA10324F
PRE·SET SW
BINARY TO 1-OF-4 DEC WITH INH
LEVEL CONV
CN751
CAM 5V
GND
RC
BC
WB1
WB2
WB3
R CTL
B CTL
NC
R760 PRESET OUTDOOR R
R761 PRESET OUTDOOR B
R768 PRESET INDOOR R
R769 PRESET INDOOR B
IC754 BU4053BF
FAW/STD SW
CAM 5 V
IC753 BA10324F
D751 MA141WA
D752 DAP202U
FAW (H)
R770 R INDOOR LIMITER
R771 B INDOOR LIMITER
R778 R OUTDOOR LIMITER
R779 B OUTDOOR LIMITER
C752 2.2/6.3
C753 2.2/6.3

## 5.24 FAW SCHEMATIC DIAGRAM AND FAW 2 CIRCUIT BOARD

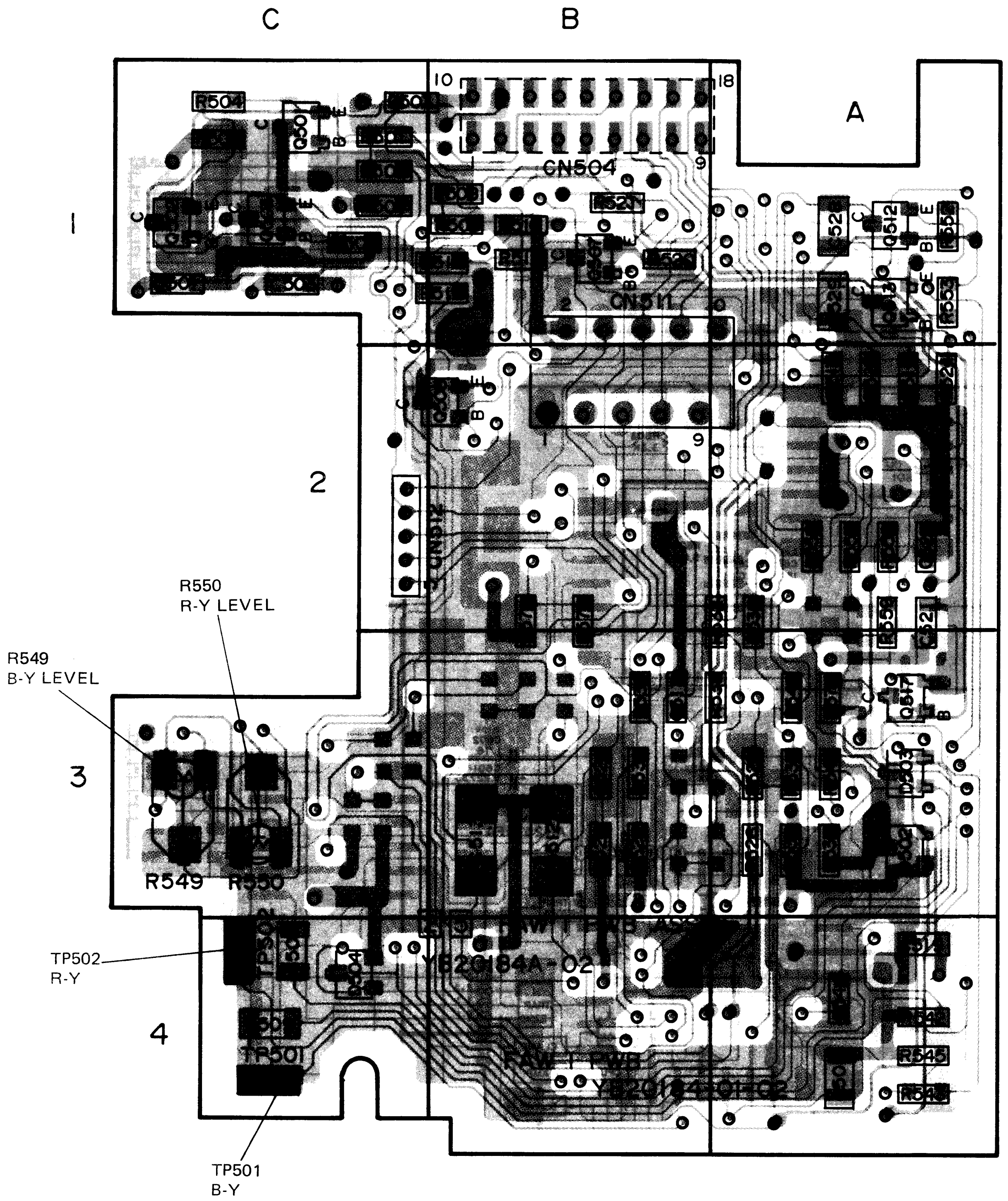
- Voltage : Measured as the color bar pattern which lighted up brightly is shot in the Rehersal mode.
- Address of chip parts A-1D
  - Address
  - A : Discrete parts side
  - B : Chip parts side
- SIGNAL PATH
  - ⬅ B CTL
  - ⇦ R CTL

– Rear (B)

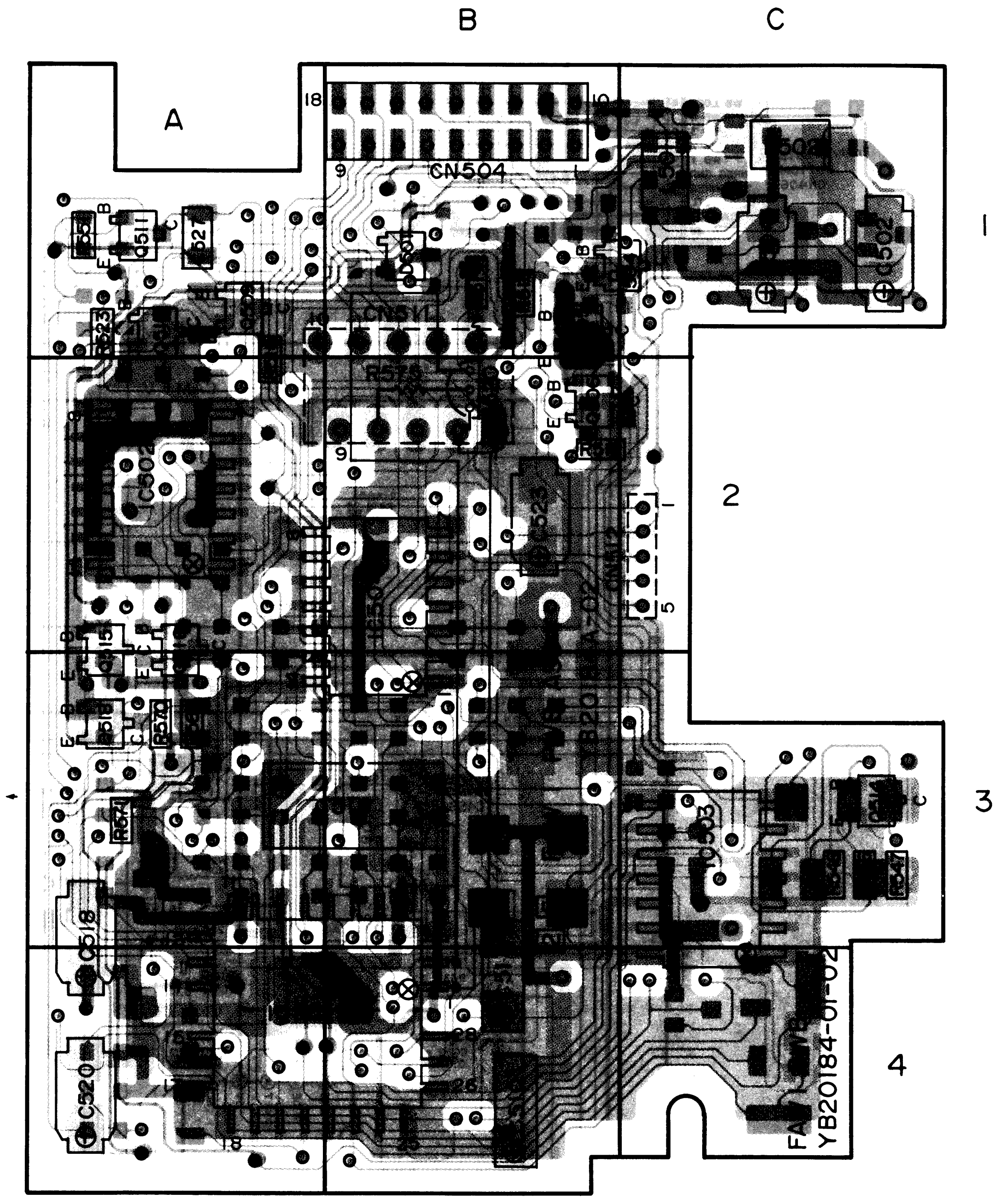

25 FAW1
Q501, Q502 2SC3936 (BC)
Q503 2SC4081 (QR)
Q504, Q505 2SC3936 (BC)
Q506 2SC4081 (QR)
Q507 2SC3936 (BC)
IC501 HA11899MP
Q508 2SC4081 (QR)
Q509 2SC3936 (BC)
Q510~Q513 2SC4081 (QR)
IC502 BA10339F
From / To 24 BOTTOM, CN405
CN504
GND
GND
CAM 5V
CAM 9V
ENCP
WB4
C BLK
WB5
B-Y
WB3
R-Y
B CTL
FL DET
R CTL
YL
WB2
VD
WB1
L502 22
L501 22
C501 0.01
C502 10/16
C503 0.01
C504 22/6.3
CAM 9 V
CAM 5 V
B-Y
R-Y
R+B-2Y
CLAMP Q502
CLAMP Q505
MIX
CLAMP
Q501
Q503
Q504
Q506
Q507
Q508
Q509
Q510
Q511
Q512
Q513
D501 MA141A
C528 0.047
C527 0.047
C529 0.047
-YL
YL
R551 47K
R552 47K
R553 47K
TP501 B-Y
TP502 R-Y
C509 0.047
C507 0.047
FL (H)
CAM 5 V
Q514
R549 B-Y LEVEL
R550 R-Y LEVEL
FL DET
IC504
Vcc
GND
IC501
CLAMP
GATE
COMP
UP/DOWN
6bit UP/DOWN COUNT-ER
D/A
CA AMP
WB LAMP
RESET CONTROL
START/STOP CONTROL
FAW(H)
WB LOCK(H)
D502 MA141WA
D503 DAN202U
Q515
Q516
Q517
Q518
Q520
WB CURVE DET
IC502
IC503
D504 MA141WA
CAM 5 V
IC503 BA10339F
Q516 2SC3936 (BC)
Q515, Q517 2SK665
Q518 2SC4081 (QR)
Q514 2SC4081 (QR)
IC504 BU4011BF
Q520 2SK117
CN512
NC
CN511
CN751
CAM 5V
GND
RC
BC
WB1
WB2
WB3
R CTL
B CTL
NC
FAW2
IC753 BA10324
FAW 2
FAW PW
IC754
IC753
A
B
C
D
E
F
G
1
2
3
4
5
6

## 5.25 FAW 1 CIRCUIT BOARD

— Rear —
(B)


C
B
A
1
2
3
4
CN504
CN511
CN512
R504
R549
R550
R550
R-Y LEVEL
R549
B-Y LEVEL
TP502
R-Y
TP501
B-Y
YB20184A-02
FAW 1 PWB
YB20184-01-02

— Front —
(A)

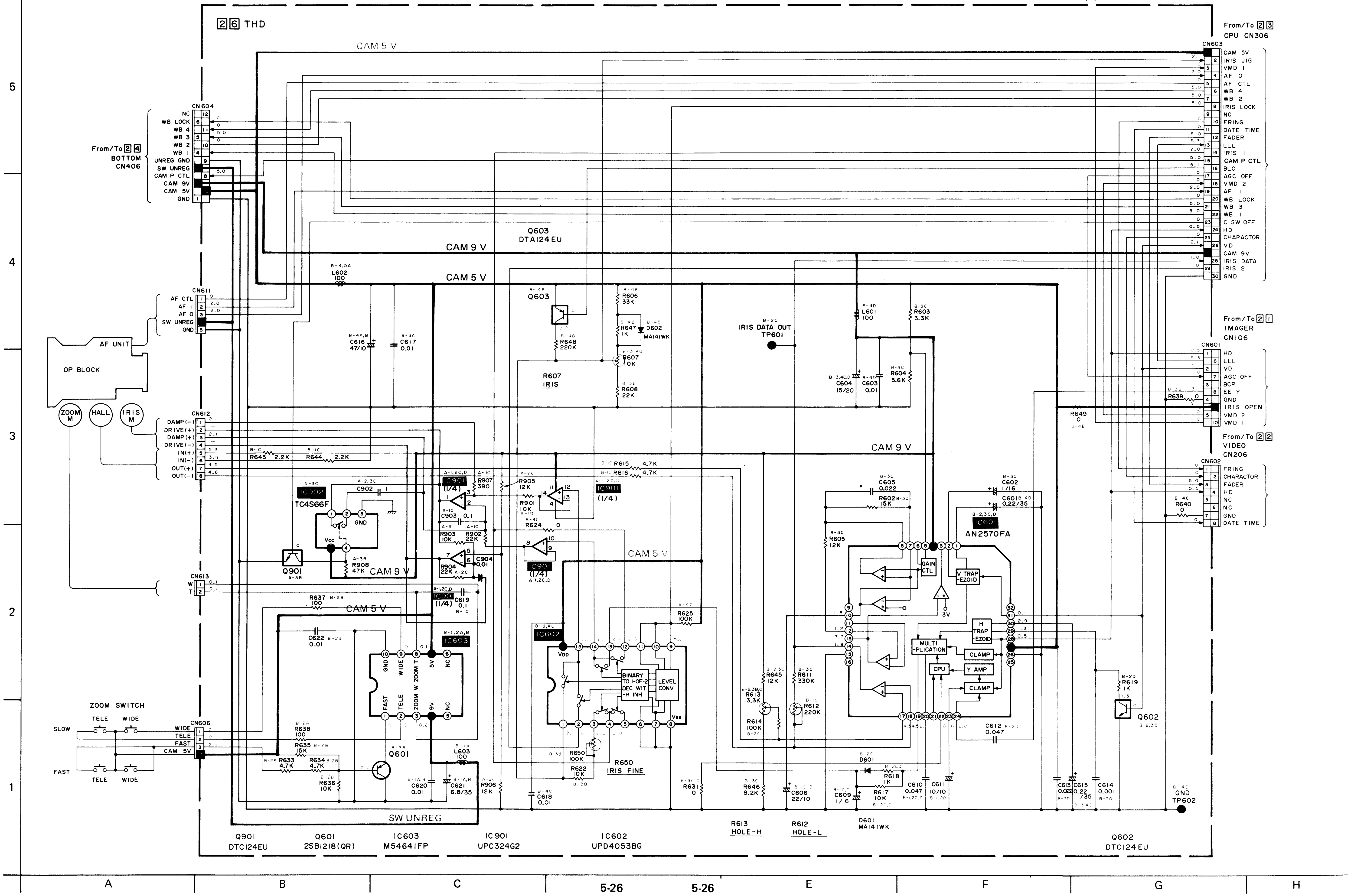

A
B
C
1
2
3
4
CN504
CN512
C502
C520
YB20184-01-02

## 5.26 THD SCHEMATIC DIAGRAM

● Voltage : Measured as the color bar pattern which lighted up brightly is shot in the Rehersal mode.

● Address of chip parts

A-1D
- 1D — Address
- A : Discrete parts side
- B : Chip parts side



2 6 THD
CAM 5 V
CAM 9 V
CAM 5 V
CAM 9 V
CAM 5 V
CAM 9 V
CAM 5 V
SW UNREG
From/To 2 4 BOTTOM CN406
CN604
NC 12
WB LOCK 6
WB 4 11
WB 3 5
WB 2 10
WB 1 4
UNREG GND 9
SW UNREG
CAM P CTL 8
CAM 9V
CAM 5V
GND 1
CN611
AF CTL 1
AF 1 2
AF 0 3
SW UNREG
GND 5
AF UNIT
OP BLOCK
ZOOM M
HALL
IRIS M
CN612
DAMP(−) 1
DRIVE(+) 2
DAMP(+) 3
DRIVE(−) 4
IN(+) 5
IN(−) 6
OUT(+) 7
OUT(−) 8
CN613
W 1
T 2
ZOOM SWITCH
TELE
WIDE
SLOW
FAST
TELE
WIDE
CN606
WIDE 1
TELE 2
FAST 3
CAM 5V
From/To 2 3 CPU CN306
CN603
CAM 5V
IRIS JIG 2
VMD 1 3
AF 0 4
AF CTL 5
WB 4 6
WB 2 7
IRIS LOCK 8
NC 9
FRING 10
DATE TIME 11
FADER 12
LLL 13
IRIS 1 14
CAM P CTL 15
BLC 16
AGC OFF 17
VMD 2 18
AF 1 19
WB LOCK 20
WB 3 21
WB 1 22
C SW OFF 23
HD 24
CHARACTOR 25
VD 26
CAM 9V
IRIS DATA 28
IRIS 2 29
GND 30
From/To 2 1 IMAGER CN106
CN601
HD 1
LLL 6
VD 2
AGC OFF 7
BCP 3
EE Y 8
GND 4
IRIS OPEN
VMD 2 5
VMD 1 10
From/To 2 2 VIDEO CN206
CN602
FRING 1
CHARACTOR 2
FADER 3
HD 4
NC 5
NC 6
GND 7
DATE TIME 8
B-3B R639 0
B-4C R640 0
R649 0
Q603 DTA124EU
B-4B Q603
B-4B R648 220K
B-4B R606 33K
B-4B R647 1K
B-4B D602 MA141WK
B-3,4B R607 10K
B-3B R608 22K
R607 IRIS
B-4,5A L602 100
B-4A,B C616 47/10
B-3A C617 0.01
B-2C IRIS DATA OUT TP601
B-4D L601 100
B-3C R603 3.3K
B-3C R604 5.6K
B-3,4C,D C604 15/20
B-4D C603 0.01
B-1C R643 2.2K
B-1C R644 2.2K
B-1C R615 4.7K
B-1C R616 4.7K
A-3C IC902 TC4S66F
A-2,3C C902 1
GND
Vcc
A-3B R908 47K
Q901 A-3B
A-1C IC901 (1/4)
A-1C R907 390
A-1C C903 0.1
R903 10K
R902 22K
R904 22K A-2C
C904 0.01
A-2C R905 12K
R901 10K
B-4C R624 0
A-1,2C,D IC901 (1/4)
IC901 (1/4) A-1,2C,D
A-1,2C,D IC901 (1/4)
C619 0.1 B-1C
R637 B-2B 100
C622 B-2B 0.01
B-1,2A,B IC603
GND WIDE ZOOM T 5V NC
FAST TELE ZOOM W 9V NC
B-2B Q601
B-2A R638 100
R635 B-2B 15K
B-2B R633 4.7K
R634 B-2B 4.7K
B-2B R636 10K
B-1A L603 100
B-1A,B C620 0.01
B-1A,B C621 6.8/35
A-2C R906 12K
B-4C C618 0.01
B-3,4C IC602
VDD
BINARY TO 1-OF-2 DEC WIT -H INH
LEVEL CONV
Vss
B-4C R625 100K
B-3B R650 100K
R622 10K B-3B
R650 IRIS FINE
B-3C,D R631 0
B-2,3C R645 12K
B-2,3B,C R613 3.3K
R614 100K B-2C
B-3C R611 330K
B-1C R612 220K
B-3C R646 8.2K
B-1C,D C606 22/10
B-1C,D C609 1/16
B-2C D601
B-2C,D R618 1K
R617 10K B-2C,D
C610 0.047
C611 10/10
R613 HOLE-H
R612 HOLE-L
D601 MA141WK
B-3C C605 0.022
R602 B-3C 15K
B-3C R605 12K
B-3D C602 1/16
C601 B-4D 0.22/35
B-2,3C,D IC601 AN2570FA
GAIN CTL
V TRAP -EZOID
3V
H TRAP -EZOID
MULTI -PLICATION
CLAMP
CPU
Y AMP
CLAMP
C612 B-2D 0.047
C613 0.022
C615 0.22 /35
C614 0.001
B-2D R619 1K
Q602 B-2,3D
B-4D GND TP602
Q901 DTC124EU
Q601 2SB1218(QR)
IC603 M54641FP
IC901 UPC324G2
IC602 UPD4053BG
Q602 DTC124EU
6
5
4
3
2
1
A
B
C
E
F
G
H

6

## 5.27 THD CIRCUIT BOARD

5

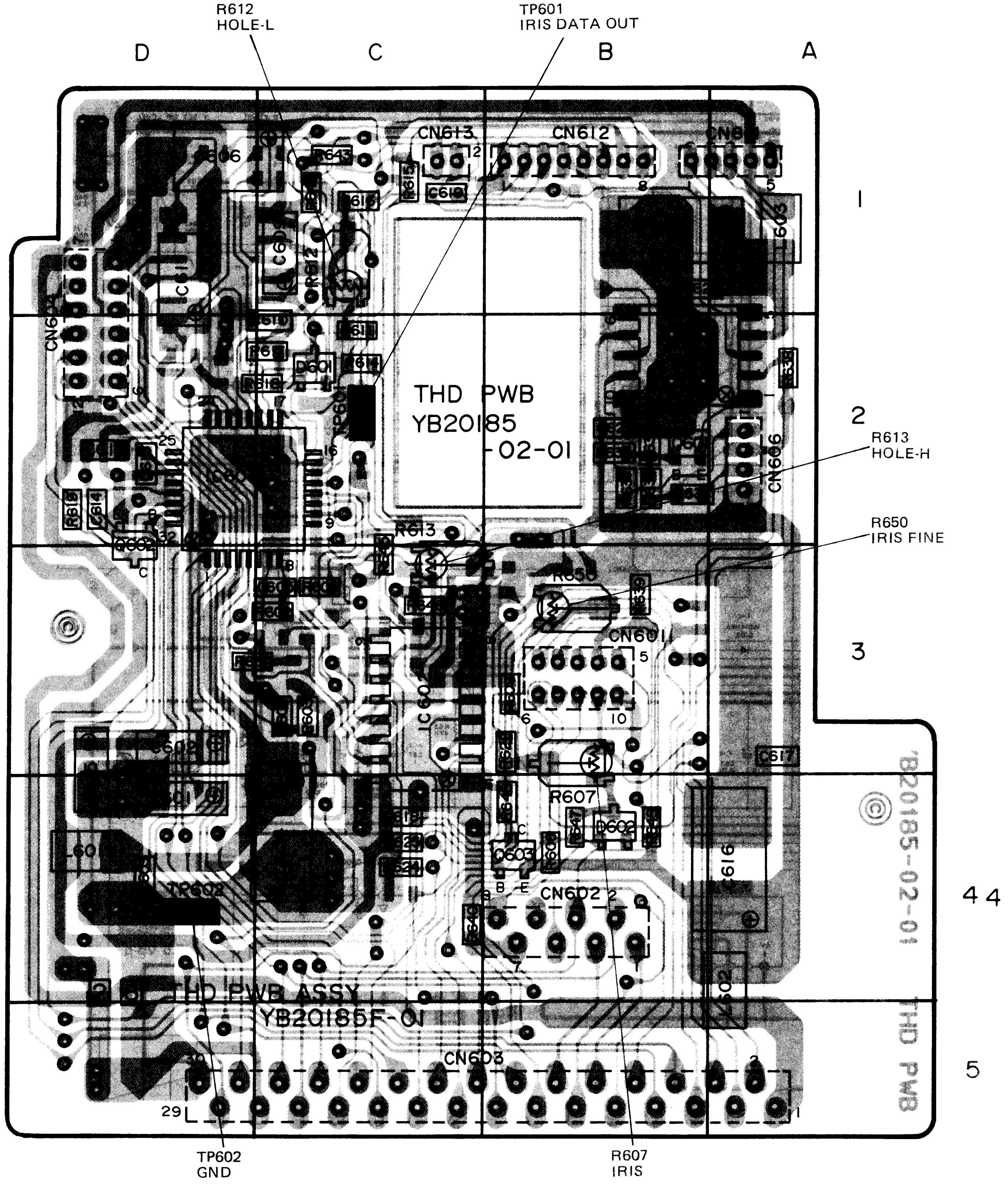
4

3

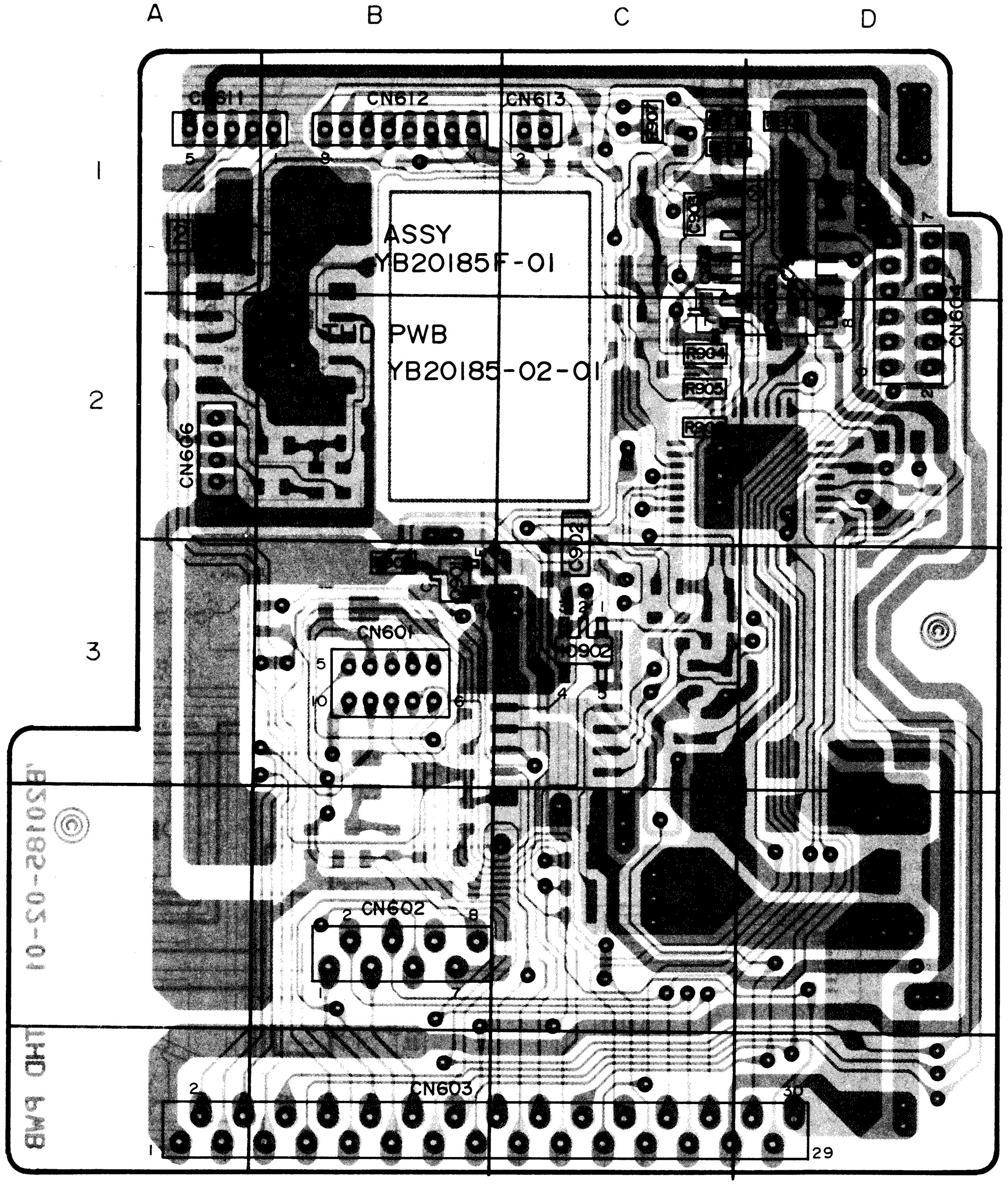
2

1

— Rear —
(B)


R612
HOLE-L
TP601
IRIS DATA OUT
D
C
B
A
CN613
CN612
1
2
3
44
5
R613
HOLE-H
R650
IRIS FINE
THD PWB
YB20185
-02-01
CN606
CN601
R607
CN602
THD PWB ASSY
YB20185F-01
CN603
YB20185-02-01
THD PWB
TP602
GND
R607
IRIS

— Front —
(A)


A
B
C
D
CN611
CN612
CN613
1
2
3
ASSY
YB20185F-01
THD PWB
YB20185-02-01
CN606
CN601
CN602
CN603
YB20185-02-01
THD PWB

A B C D E F G H

## 5.28 IMAGER SCHEMATIC DIAGRAM

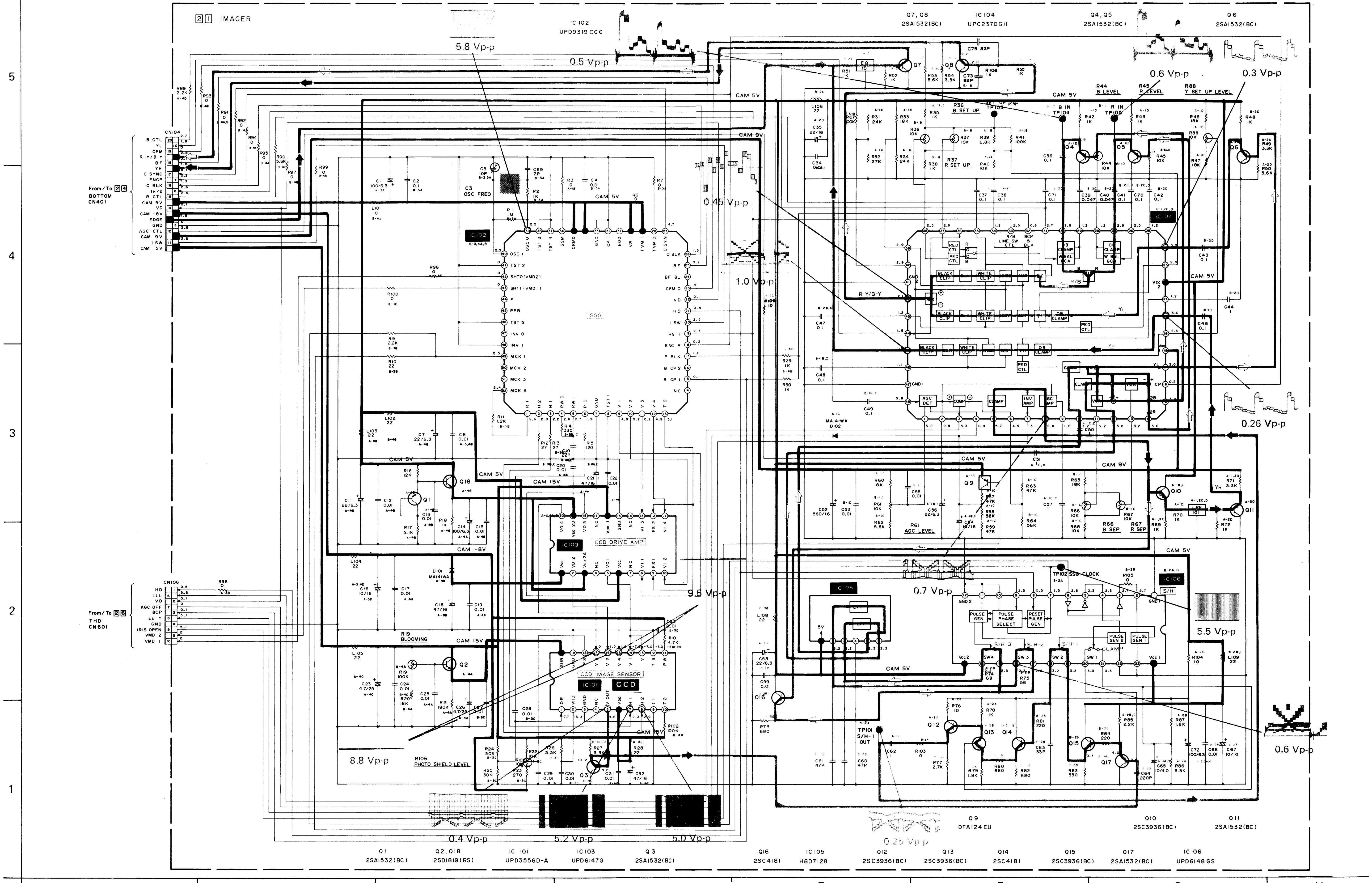
- Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

- Voltage : Measured as the color bar pattern which lighted up brightly is shot in the Rehersal mode.

- Waveform : Measured as the grey scale pattern and color bar pattern which lighted up brightly is shot in the Rehersal mode.

- Address of chip parts
  A-1D
  - Address
  - A : Discrete parts side
  - B : Chip parts side

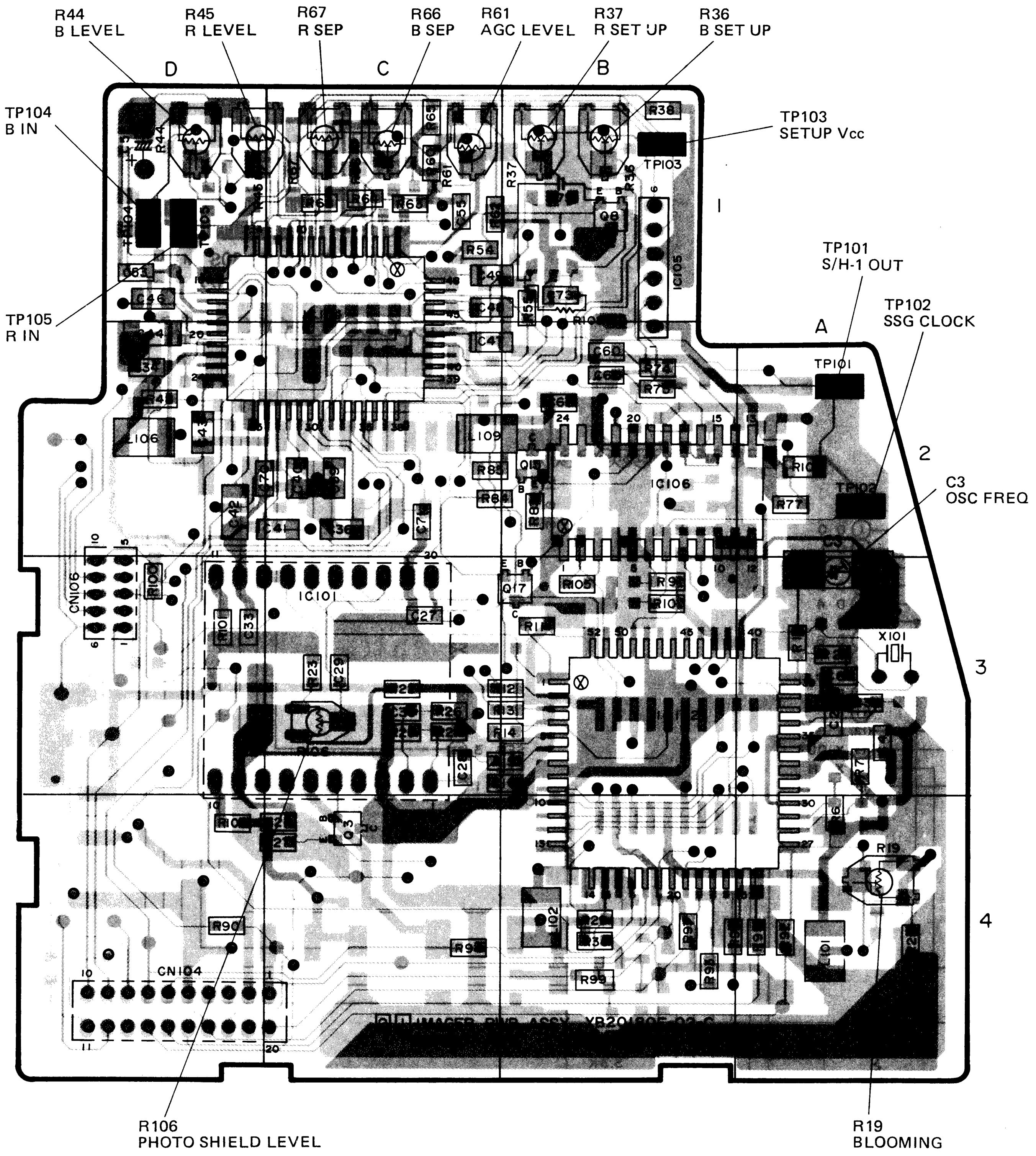
- SIGNAL PATH
  - ⬅ Y
  - ⇦ COLOR



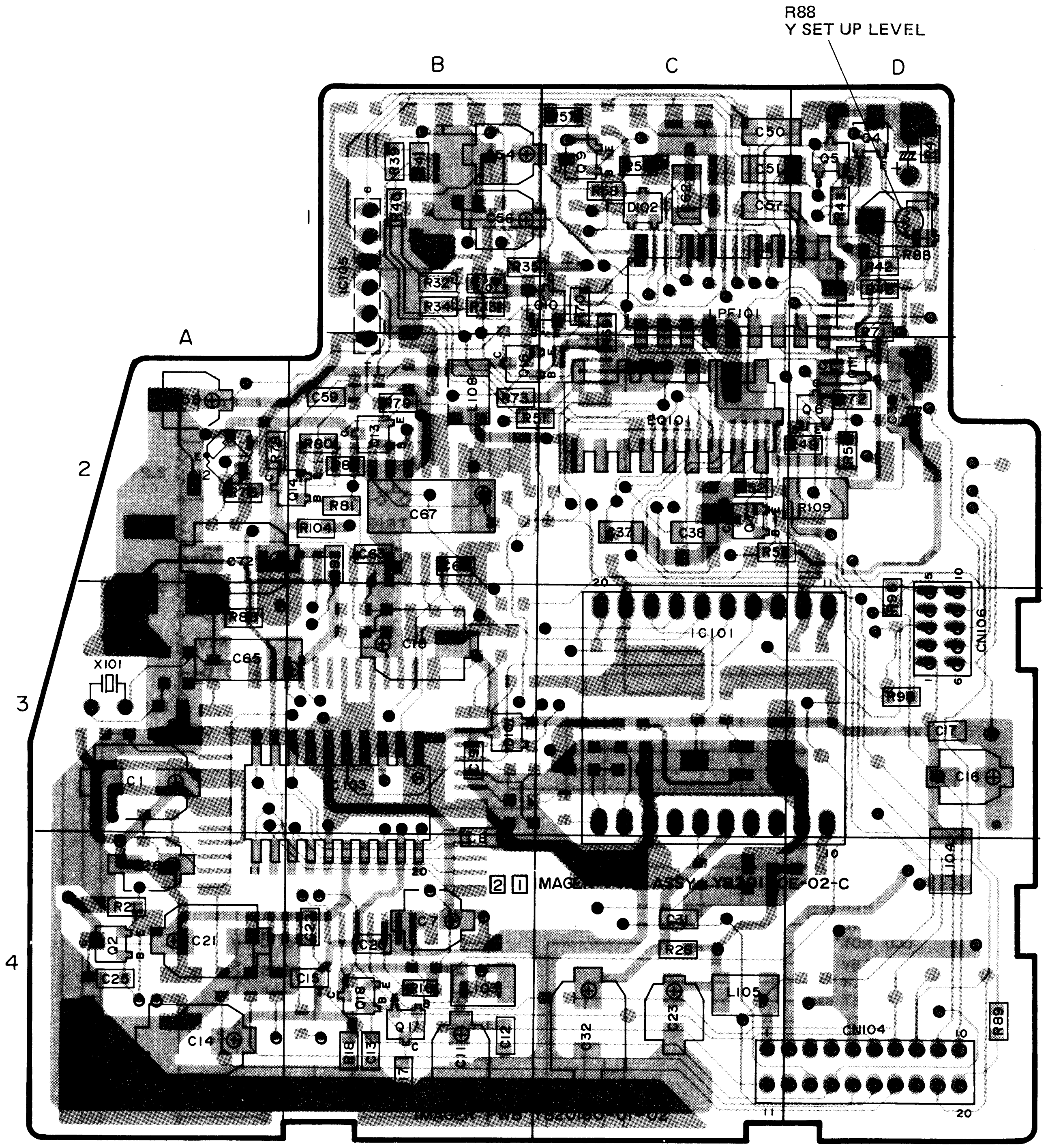
6
5
4
3
2
1
A
B
C
D
E
F
G
H
2I IMAGER
IC 102
UPD9319CGC
Q7, Q8
2SA1532(BC)
IC 104
UPC2370GH
Q4, Q5
2SA1532(BC)
Q6
2SA1532(BC)
5.8 Vp-p
0.5 Vp-p
0.6 Vp-p
0.3 Vp-p
0.45 Vp-p
1.0 Vp-p
0.26 Vp-p
0.7 Vp-p
9.6 Vp-p
5.5 Vp-p
0.6 Vp-p
8.8 Vp-p
0.4 Vp-p
5.2 Vp-p
5.0 Vp-p
0.25 Vp-p
CN104
B CTL
YL
CFM
R-Y/B-Y
BF
YH
C SYNC
ENCP
C BLK
fH/2
R CTL
CAM 5V
VD
CAM -8V
EDGE
GND
AGC CTL
CAM 9V
LSW
CAM 15V
From/To 2④ BOTTOM CN401
CN106
HD
LLL
VD
AGC OFF
BCP
EE Y
GND
IRIS OPEN
VMD 2
VMD 1
From/To 2⑥ THD CN601
C3 OSC FREQ
SSG
CCD DRIVE AMP
IC103
CCD IMAGE SENSOR
IC101
CCD
R19 BLOOMING
R106 PHOTO SHIELD LEVEL
CAM 5V
CAM 9V
CAM 15V
CAM -8V
R36 B SET UP
R37 R SET UP
R44 B LEVEL
R45 R LEVEL
R88 Y SET UP LEVEL
B IN TP104
R IN TP105
BLACK CLIP
WHITE CLIP
CLAMP
PED CTL
AGC DET
COMP
INV AMP
GC AMP
R61 AGC LEVEL
R66 B SEP
R67 R SEP
MA141WA D102
MA141WA D101
IC105
IC106
TP102 SSG CLOCK
PULSE GEN
PULSE PHASE SELECT
RESET PULSE GEN
PULSE GEN 2
PULSE GEN 1
S/H
SW4
SW3
SW2
SW1
TP101 S/H-1 OUT
Q1
2SA1532(BC)
Q2, Q18
2SD1819(RS)
IC 101
UPD3556D-A
IC 103
UPD6147G
Q3
2SA1532(BC)
Q16
2SC4181
IC105
HBD7128
Q12
2SC3936(BC)
Q13
2SC3936(BC)
Q14
2SC4181
Q15
2SC3936(BC)
Q17
2SA1532(BC)
IC106
UPD6148GS
Q9
DTA124EU
Q10
2SC3936(BC)
Q11
2SA1532(BC)

## 5.29 IMAGER CIRCUIT BOARD

– Rear –
(B)

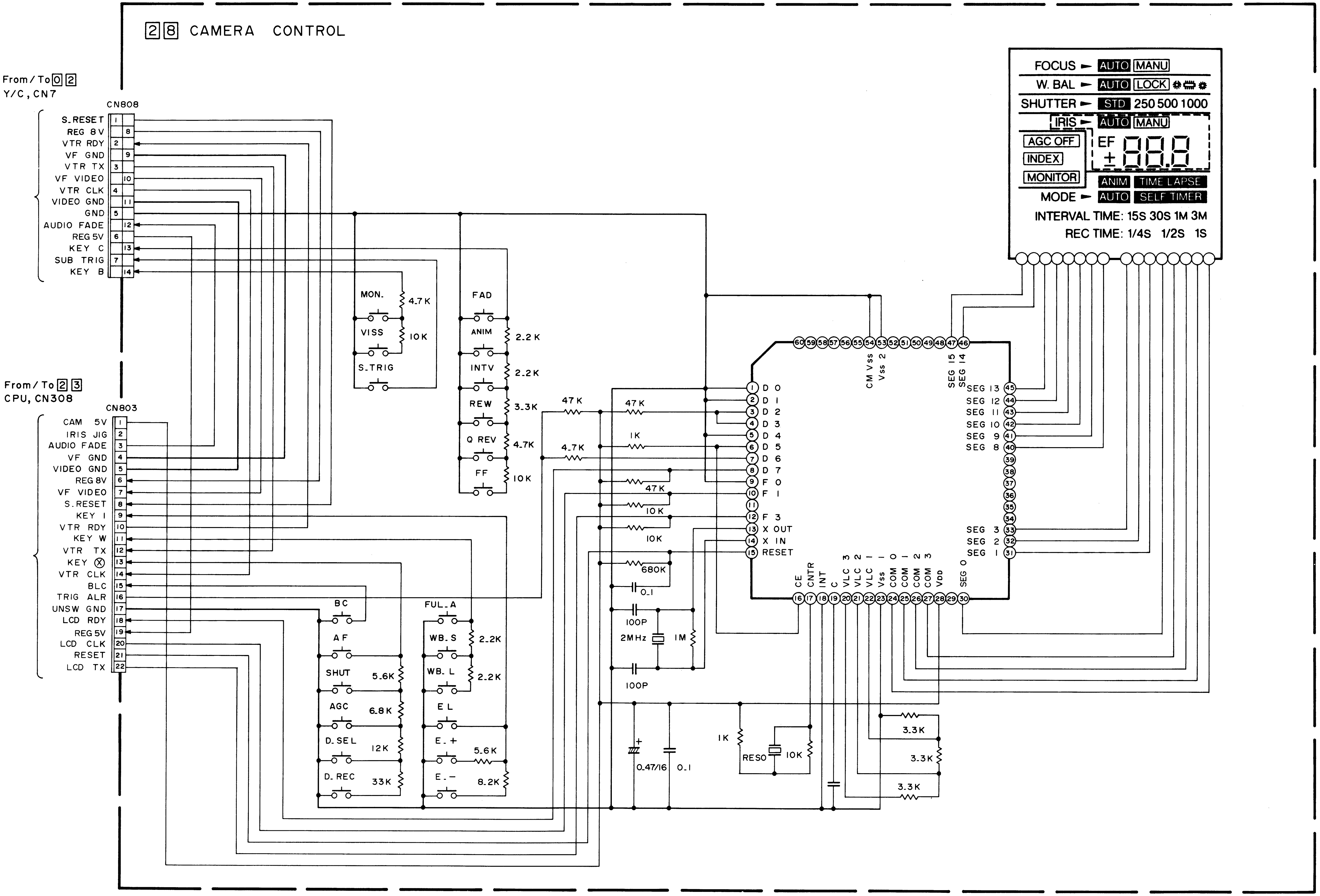

R44
B LEVEL
R45
R LEVEL
R67
R SEP
R66
B SEP
R61
AGC LEVEL
R37
R SET UP
R36
B SET UP
TP104
B IN
TP103
SETUP Vcc
TP105
R IN
TP101
S/H-1 OUT
TP102
SSG CLOCK
C3
OSC FREQ
R106
PHOTO SHIELD LEVEL
R19
BLOOMING
D
C
B
A
1
2
3
4

– Front –
(A)


R88
Y SET UP LEVEL
B
C
D
A
1
2
3
4

## 5.30 CAMERA CTL SCHEMATIC DIAGRAM

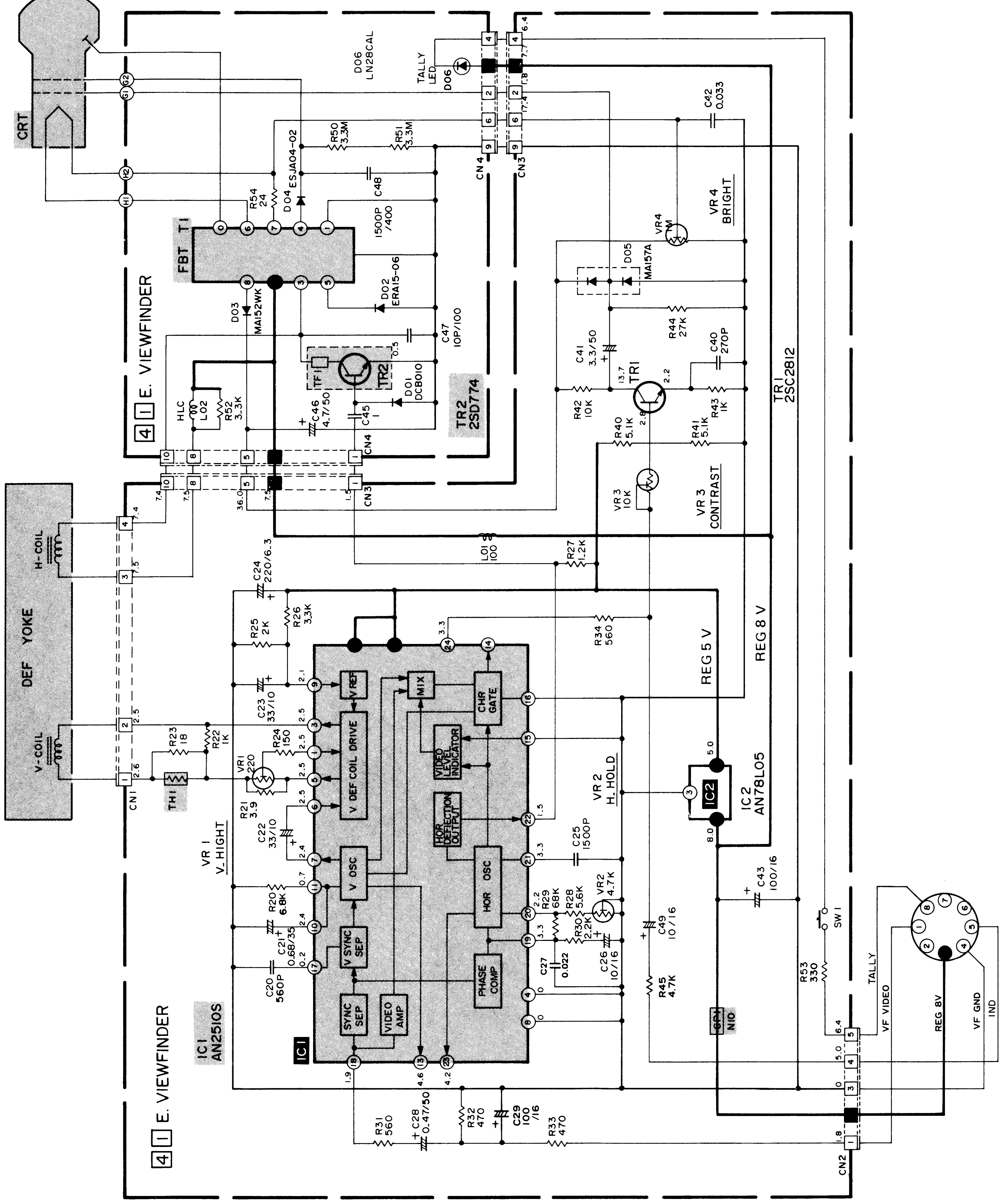
**Note:**
**This schematic diagram is only for reference.**
**Avoid replacing individual parts.**
**Replace the entire unit only.**



28 CAMERA CONTROL
From/To 02
Y/C, CN7
CN808
S.RESET
REG 8V
VTR RDY
VF GND
VTR TX
VF VIDEO
VTR CLK
VIDEO GND
GND
AUDIO FADE
REG 5V
KEY C
SUB TRIG
KEY B
From/To 23
CPU, CN308
CN803
CAM 5V
IRIS JIG
AUDIO FADE
VF GND
VIDEO GND
REG 8V
VF VIDEO
S.RESET
KEY 1
VTR RDY
KEY W
VTR TX
KEY ⓧ
VTR CLK
BLC
TRIG ALR
UNSW GND
LCD RDY
REG 5V
LCD CLK
RESET
LCD TX
MON.
4.7K
VISS
10K
S.TRIG
FAD
ANIM
2.2K
INTV
2.2K
REW
3.3K
Q REV
4.7K
FF
10K
BC
AF
SHUT
5.6K
AGC
6.8K
D.SEL
12K
D.REC
33K
FUL.A
WB.S
2.2K
WB.L
2.2K
EL
E.+
5.6K
E.−
8.2K
47K
4.7K
47K
1K
47K
10K
10K
680K
0.1
100P
2MHz
1M
100P
0.47/16
0.1
1K
RESO
10K
3.3K
3.3K
3.3K
D0
D1
D2
D3
D4
D5
D6
D7
F0
F1
F3
X OUT
X IN
RESET
CE
CNTR
INT
C
VLC3
VLC2
VLC1
Vss
COM0
COM1
COM2
COM3
VDD
SEG 0
SEG 1
SEG 2
SEG 3
SEG 8
SEG 9
SEG 10
SEG 11
SEG 12
SEG 13
SEG 14
SEG 15
CM Vss
Vss 2
FOCUS ► AUTO MANU
W. BAL ► AUTO LOCK
SHUTTER ► STD 250 500 1000
IRIS ► AUTO MANU
AGC OFF
INDEX
MONITOR
EF
±
88.8
ANIM TIME LAPSE
MODE ► AUTO SELF TIMER
INTERVAL TIME: 15S 30S 1M 3M
REC TIME: 1/4S 1/2S 1S

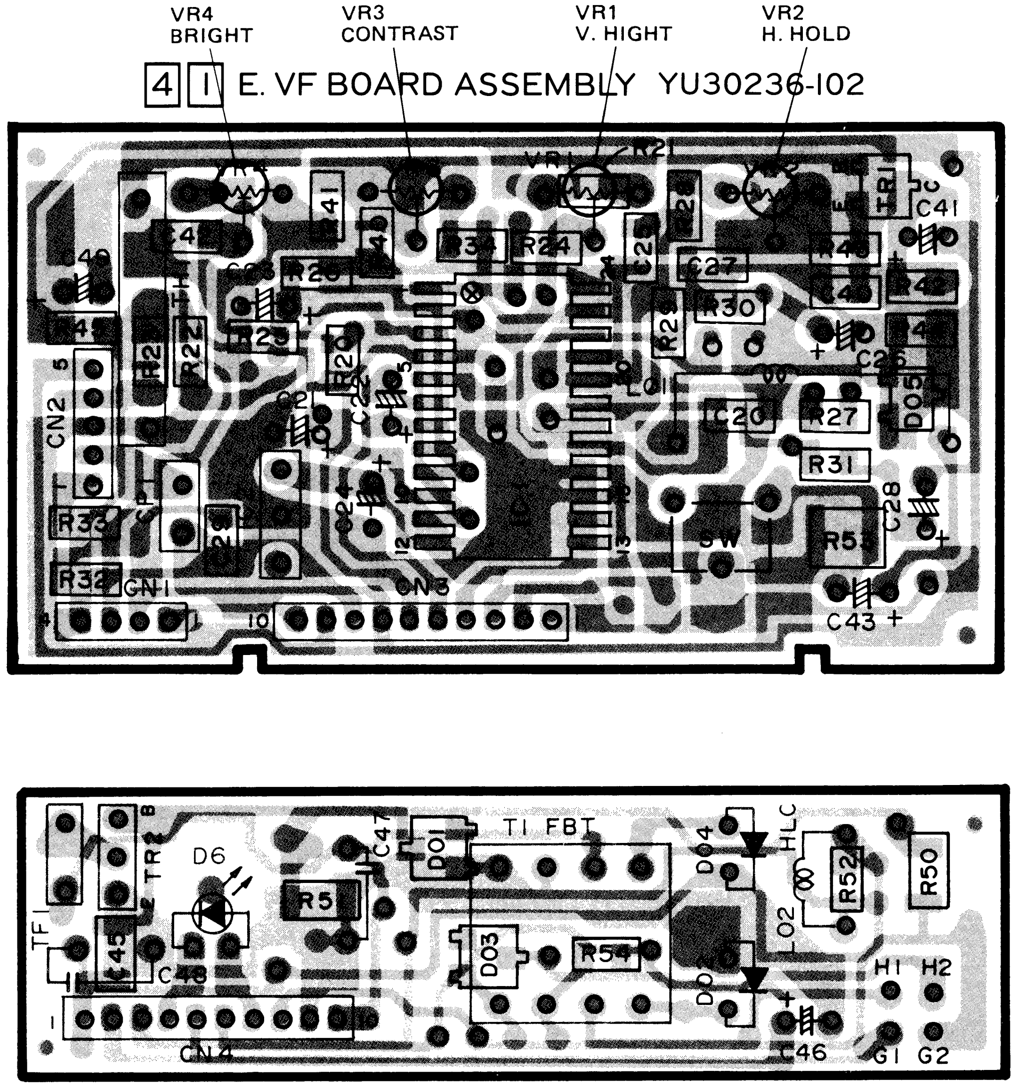
## 5.31 ELECTRICAL VIEWFINDER SCHEMATIC DIAGRAM

- Voltage : Measured as the color bar pattern which lighted up brightly is shot in the Rehersal mode.
- **Shaded (▨) parts are critical for safety. Replace only with specified part numbers.**



CRT
G2
G1
H2
H1
FBT T1
D06 LN28CAL
TALLY LED D06
R50 3.3M
R51 3.3M
R54 24
D04 ESJA04-02
C48 1500P /400
D02 ERA15-06
D03 MA152WK
C47 10P/100
TF1
TR2
D01 DCB010
TR2 2SD774
HLC L02
R52 3.3K
C46 4.7/50
C45 1
CN4
CN3
C42 0.033
VR4 1M
VR4 BRIGHT
D05 MA157A
R44 27K
C40 270P
C41 3.3/50
TR1
R42 10K
R43 1K
R40 5.1K
R41 5.1K
TR1 2SC2812
VR3 10K
VR3 CONTRAST
DEF YOKE
H-COIL
V-COIL
CN1
TH1
4 1 E. VIEWFINDER
L01 100
R27 1.2K
C24 220/6.3
R25 2K
R26 3.3K
R34 560
C23 33/10
R23 18
R22 1K
R24 150
VR1 220
R21 3.9
C22 33/10
VR1 V. HIGHT
V REF
MIX
CHR GATE
V DEF COIL DRIVE
VIDEO LEVEL INDICATOR
HOR DEFLECTION OUTPUT
V OSC
HOR OSC
V SYNC SEP
PHASE COMP
SYNC SEP
VIDEO AMP
IC1
IC1 AN2510S
R20 6.8K
C21 0.68/35
C20 560P
C25 1500P
VR2 H. HOLD
VR2 4.7K
R29 68K
R28 5.6K
R30 2.2K
C27 0.022
C26 10/16
C49 10/16
R45 4.7K
REG 5 V
REG 8 V
IC2
IC2 AN78L05
C43 100/16
SW1
R53 330
GP1 N10
TALLY
VF VIDEO
REG 8V
VF GND
IND
CN2
R31 560
C28 0.47/50
R32 470
C29 100 /16
R33 470
4 1 E. VIEWFINDER

## 5.32 ELECTRICAL VIEWFINDER CIRCUIT BOARD



VR4 BRIGHT
VR3 CONTRAST
VR1 V. HIGHT
VR2 H. HOLD
4 1 E. VF BOARD ASSEMBLY YU30236-I02
VR1
R21
TR1
C41
C40
R41
R25
R34
R24
C25
R26
C27
R30
R29
R22
R20
C20
R27
R31
D05
C22
C21
C23
IC1
CN2
R33
R32
CN1
CN3
SW
R53
C28
C43
D6
R51
C47
D01
T1 FBT
D04
HLC
R52
R50
TF1
TR2
C45
C48
D03
R54
D02
L02
H1
H2
CN4
C46
G1
G2

# SECTION 6
# EXPLODED VIEWS AND PARTS LIST

## SAFETY PRECAUTION

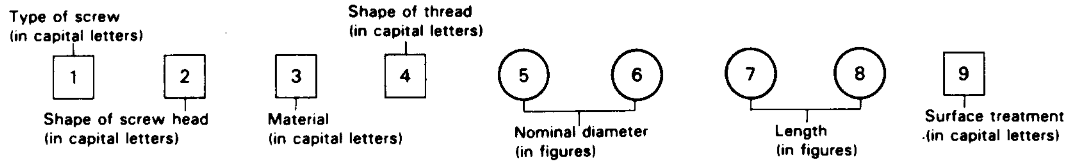
**Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.**

NOTE: [M ] indicates mechanical symbol number.

## 6.1 STANDARD PART NUMBER CODING

### 6.1.1 Screw coding

Standard screw part numbers are as follows.

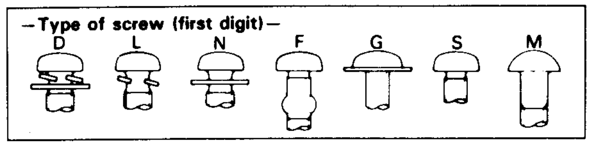

Type of screw
(in capital letters)
Shape of thread
(in capital letters)
1
2
3
4
5
6
7
8
9
Shape of screw head
(in capital letters)
Material
(in capital letters)
Nominal diameter
(in figures)
Length
(in figures)
Surface treatment
(in capital letters)

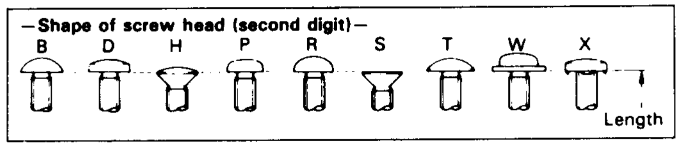
**Type of screw (first digit)**

- S Normal screws
- D Assembled machine screws (with plain and spring washers)
- L 〃 (with spring washer)
- N 〃 (with plain washer)
- F Feather screws
- G Washer head tapping screws
- M Wood screws

**Shape of screw head (second digit)**

- B Brazier head
- D Binding head
- H Oval countersunk head
- P Pan head
- R Round head
- S Flat head
- T Truss head
- W Washer head (machine screws)
- X Toothed head


—Type of screw (first digit)—
D
L
N
F
G
S
M

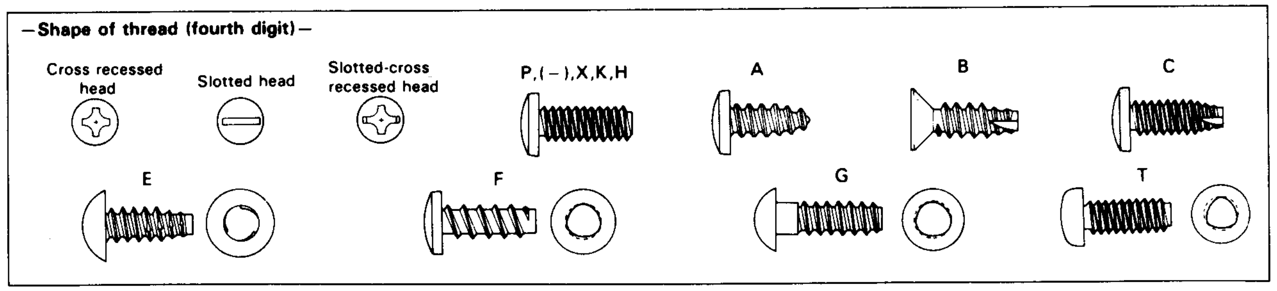

—Shape of screw head (second digit)—
B
D
H
P
R
S
T
W
X
Length

**Material (third digit)**

- S Steel
- E Stainless steel
- C Cast iron
- U Copper
- B Brass
- P Phosphor bronze
- N Nickel silver
- Y Cast brass
- A Aluminum
- Z Zinc alloy
- K Polycarbonate

**Shape of thread (fourth digit)**

- P Cross recessed head screws
- (−) Slotted head machine screws
- X Slotted-cross recessed head machine screws
- K Cross recessed head machine screws for precision equipment (type 1)
- H 〃 (type 3)
- A Cross recessed head tapping screws (type 1)
- B 〃 (type 2)
- C 〃 (type 3)
- E Cross recessed head special tapping screws (brand : evertight)
- F 〃 (brand : P-tight)
- T 〃 (brand : taptight)
- G 〃


—Shape of thread (fourth digit)—
Cross recessed head
Slotted head
Slotted-cross recessed head
P,(−),X,K,H
A
B
C
E
F
G
T

**Nominal diameter (fifth and sixth digits)**

The fifth and sixth digits indicate a nominal diameter or dimension. If the dimension exceeds 10 mm, three digits are used. The number indicates a nominal diameter or dimension, given in millimeters, multiplied by ten.

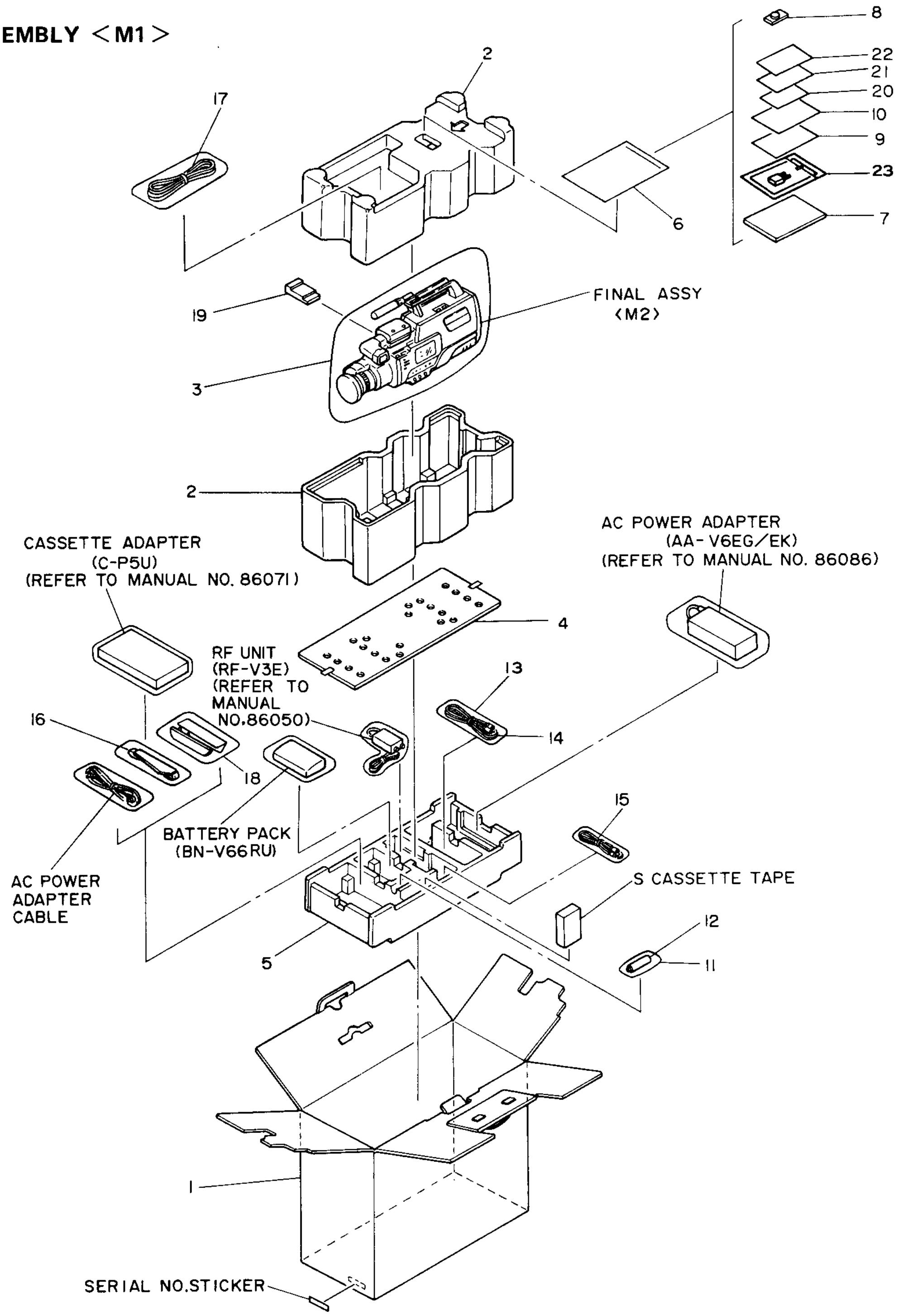
**Length (seventh and eighth digits)**

The seventh and eighth digits indicate length in millimeters. The preceding figure is zero when the dimension is smaller than 10 mm. For machine screws used in precision equipment whose length is given in units of 0.1 mm, the number indicates ten times the size of their length.

**Surface treatment (ninth digit)**

- Z Dichromate treatment after galvanizing (MFZn II-C)
- N Nickel plating (MFNiII, MFNiI)
- R Chromium plating (MBCrII, MBCrI)
- G Silver plating (SP4)
- B Black coating after plating
- F Blackening of iron (FB)
- M Blackening after galvanizing
- K Pickling of brass (PF2)
- P Phosphate treatment
- W Uni-chrome plating
- L Coated with transparent paint
- A Colored red after galvanizing (MFZnII-C)
- C Colored blue after galvanizing (MFZzII-C)
- T Colored green after galvanizing (MFZnII-C)
- V Colored purple after galvanizing (MFZnII-C)

## 6.2 PACKING ASSEMBLY <M1>

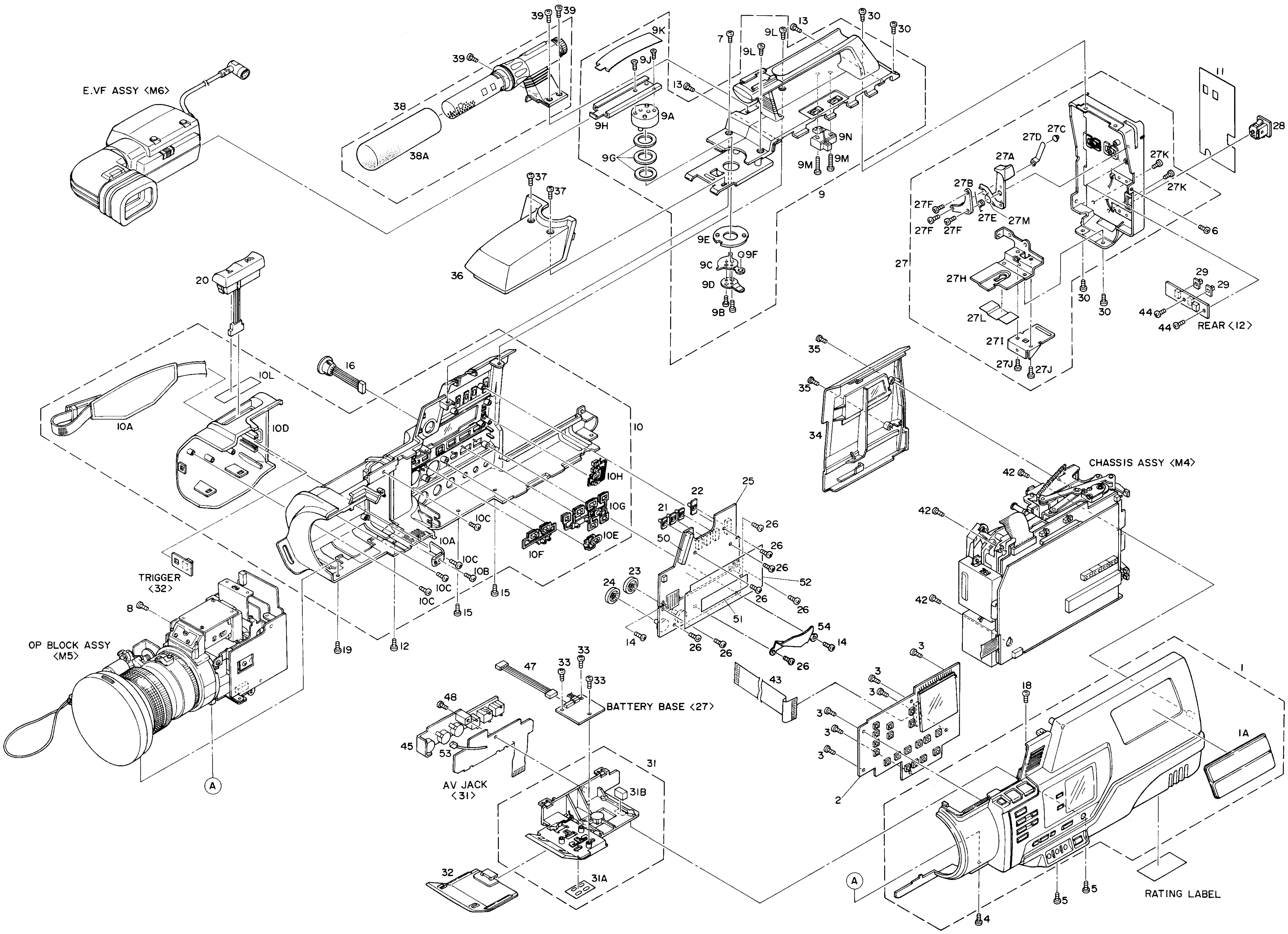

8
22
21
20
10
9
23
7
2
17
6
19
3
FINAL ASSY
<M2>
2
CASSETTE ADAPTER
(C-P5U)
(REFER TO MANUAL NO. 86071)
AC POWER ADAPTER
(AA-V6EG/EK)
(REFER TO MANUAL NO. 86086)
4
RF UNIT
(RF-V3E)
(REFER TO
MANUAL
NO.86050)
13
16
14
18
15
BATTERY PACK
(BN-V66RU)
AC POWER
ADAPTER
CABLE
S CASSETTE TAPE
12
11
5
1
SERIAL NO.STICKER

✱✱⁂✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱

### 1. PACKING ASSEMBLY ⟨M1⟩

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|
| | 1 | YU30289-4 | PACKING CASE, EK |
| | 1 | YU30289-3 | PACKING CASE, EG |
| | 2 | YU30242A-1 | CUSHION ASSY |
| | 3 | YQM30021-8 | POLY BAG |
| | 4 | YQ30482 | ACCESSORY TRAY SHEET |
| | 5 | YQ20215-1-3 | ACCESSORY TRAY |
| | 6 | QPGA025-03505 | POLY BAG, EG |
| | 6 | PQM30023-5 | POLY BAG, EK |
| ⚠ | 7 | YU30052-94 | INSTRUCTIONS, EK |
| ⚠ | 7 | YU30052-93 | INSTRUCTIONS, EG |
| ⚠ | 8 | YU40547 | BATTERY |
| | 9 | TCN-3379 | TAPE CATALOGUE |
| ⚠ | 10 | — | DBP INF SHEET, EG |
| | 11 | QPGA005-01005 | POLY BAG |
| | 12 | UM-3DJ | BATTERY |
| | 13 | QPGA010-02505 | POLY BAG |
| | 14 | PU59167-3 | CABLE ASSY |
| | 15 | PU59729 | HEADPHONE |
| | 16 | YQ20242B-1 | SHOULDER STRAP |
| | 17 | YQ10120B | AV CABLE ASSY |
| | 18 | YQ30573C | JACK COVER ASSY |
| | 19 | YQ41382 | SPACER |
| | 20 | YU40406-16 | MARKET SHEET, EK |
| | 21 | BT-20060 | GUARANTEE CARD, EK |
| | 22 | BT-20066A | E. DISTRI. LIST, EK |
| | 23 | YQ41459A | PLUG ASSY |

### 6.3 FINAL ASSEMBLY <M2>



39
39
39
39
38
38A
E.VF ASSY <M6>
9K
9J
9H
9A
9G
7
9L
9L
13
13
30
30
9N
9M
9M
9
37
37
36
9E
9F
9C
9D
9B
27D
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27B
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27F
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27M
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27K
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TRIGGER
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OP BLOCK ASSY
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CHASSIS ASSY <M4>
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BATTERY BASE <27>
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AV JACK
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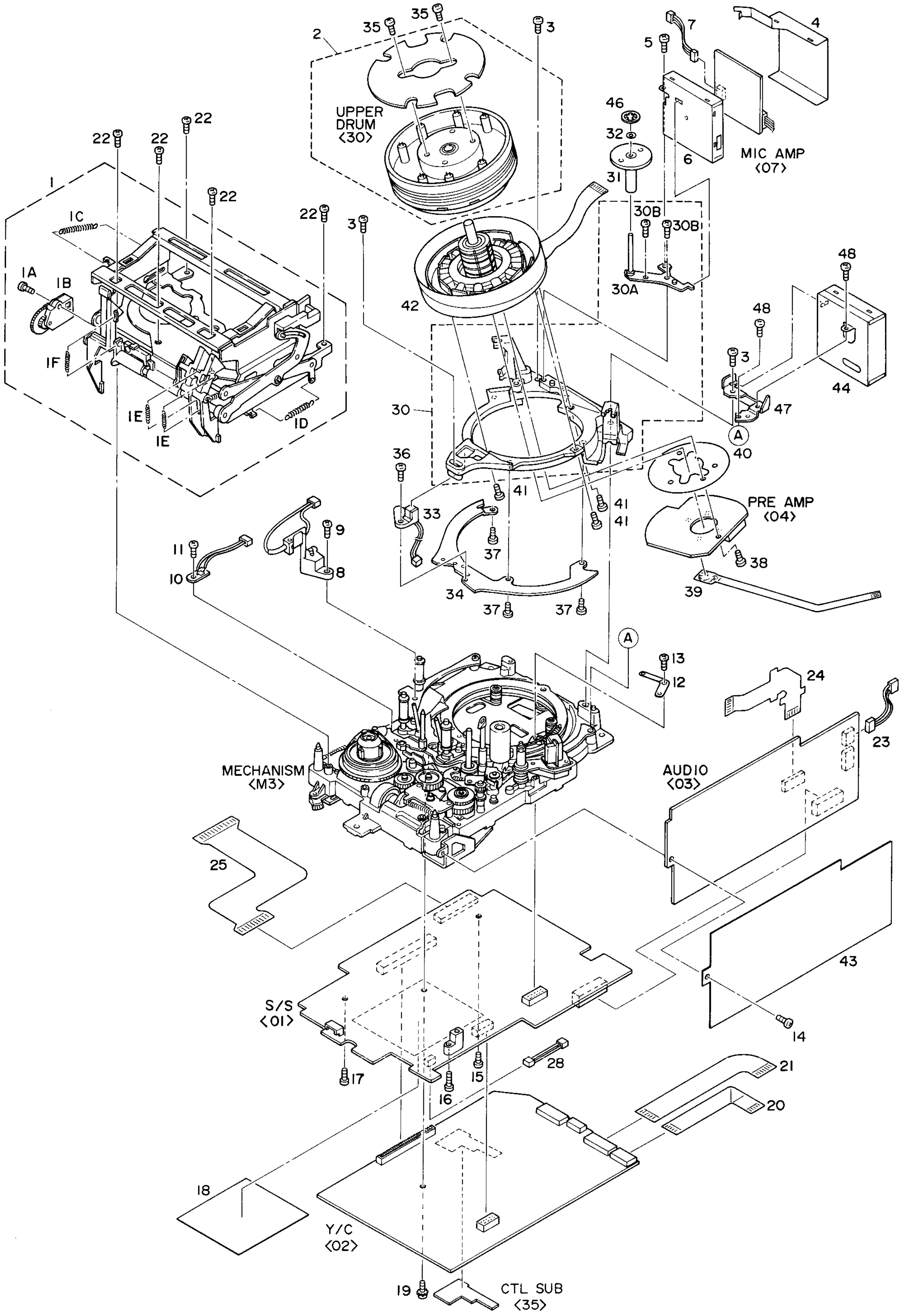
31B
32
31A
3
3
3
3
3
3
2
18
1
1A
A
4
5
5
RATING LABEL

**※*********************************

## 2. FINAL ASSEMBLY ⟨M2⟩

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|
| ⚠ | 1 | YQ10106D-8 | LOWER CASE ASSY |
| | 1A | YQ30339-1-1 | FACE PAD |
| | 2 | YU41132-2-5 | CAMERA LCD MODULE |
| | 3 | SPSF2005Z | SCREW, X6 |
| | 4 | YQM30032-9 | SPECIAL SCREW M2.6X6 |
| | 5 | YQM30032-5-2 | SPECIAL SCREW, X2 M2X5 |
| | 6 | YQM30032-5-2 | SPECIAL SCREW M2X5 |
| | 7 | YQM30032-32 | SPECIAL SCREW M2X0.4 |
| | 8 | SDSF2005Z | SCREW |
| ⚠ | 9 | YQ20175C-6 | TOP COVER ASSY |
| | 9A | YQ30362-1-1 | VF HOLDER |
| | 9B | SPSH2060Z | SCREW, X2 |
| | 9C | YQ40597 | BALL HOLDER |
| | 9D | YQ40664 | BALL SPRING |
| | 9E | YQ30102-1-2 | VF RETAINER |
| | 9F | PU41135-5 | STEEL BALL |
| | 9G | Q03093-821 | WASHER, X3 |
| | 9H | YQ40941 | VF SHOE |
| | 9J | SSSK2006Z | SCREW, X2 |
| | 9K | YQ40942 | SHOE SPRING |
| | 9L | YQM30032-5-2 | SPECIAL SCREW, X2 M2X5 |
| | 9M | SDSP2004Z | SCREW, X2 |
| | 9N | YQ41401-1-2 | GUIDE BLOCK |
| ⚠ | 10 | YQ10107D-6 | UPPER CASE ASSY |
| | 10A | YQ20178A-2 | GRIP BELT ASSY |
| | 10B | GPSF2606Z | SCREW |
| | 10C | SBSF2005Z | SCREW, X4 |
| | 10D | YQ10109-1-4 | GRIP COVER |
| | 10E | YQ41112-2-3 | BUTTON (REC) |
| | 10F | YQ41111-1-3 | BUTTON (A. DUBB.) |
| | 10G | YQ30352-1-4 | BUTTON (PAUSE) |
| | 10H | YQ30351-1-3 | BUTTON (COUNTER) |
| | 10L | YQ41339 | SHEET (GRIP) |
| ⚠ | 11 | YU30301-2 | SHEET (B. BASE) |
| | 12 | YQM30032-9 | SPECIAL SCREW M2.6X6 |
| | 13 | SDSF2005Z | SCREW, X2 |
| | 14 | SDSF2005Z | SCREW, X2 |
| | 15 | YQM30032-5-2 | SPECIAL SCREW, X2 M2X5 |
| | 16 | PU59008 | 8PIN CONNECTOR |
| | 18 | YQM30032-5-2 | SPECIAL SCREW M2X5 |
| | 19 | YQM30032-5-2 | SPECIAL SCREW M2X5 |
| | 20 | YU40953-2 | ZOOM SWITCH |
| | 21 | YQ40934-1-3 | KNOB (SLIDE 1), X3 |
| | 22 | YQ40986-1-3 | KNOB (SLIDE 2) |
| | 23 | YQ40991 | KNOB (BALANCE) |
| | 24 | YQ40992 | KNOB (REC.LEVEL) |
| | 25 | YU41133-3 | DECK LCD MODULE |
| | 26 | SPSF2005Z | SCREW, X8 |
| | 27 | YQ10110C-8 | REAR COVER ASSY |
| | 27A | YQ30547A-1 | BATTERY LOCK |
| | 27B | YQ40987-1-4 | LOCK HOLDER |
| | 27C | YQ40988-1-2 | LOCK KNOB |
| | 27D | YQ40989 | BATTERY LOCK SPRING |
| | 27E | YQ41418 | TORSION SPRING (1) |
| | 27F | SDSF2005Z | SCREW, X3 |
| | 27H | YQ30402-1-2 | REAR BRACKET |
| | 27I | YQ40935-1-1 | HOOK (2) |
| | 27J | YQM30032-5-2 | SPECIAL SCREW, X2 M2X5 |
| | 27K | YQM30032-5-2 | SPECIAL SCREW, X2 M2X5 |
| | 27L | YQ41383 | SHEET (REAR) |
| | 27M | YQ41419 | TORSION SPRING (2) |
| | 28 | PU59862-1-1 | DC JACK |
| | 29 | YQ40936-1-2 | KNOB, X2 |
| | 30 | YQM30032-5-2 | SPECIAL SCREW, X4 M2X5 |
| | 31 | YQ20179B-7 | BASE ASSY |
| | 31A | YQ40994 | BUTTON (DATE) |
| | 31B | YQM30029-24 | SPACER |
| ⚠ | 32 | YQ30404 | BACK UP BATTERY COVER |
| | 33 | SDSF2005Z | SCREW, X3 |
| | 34 | YQ20183C-7 | CASSETTE COVER ASSY |
| | 35 | YQM30032-5-2 | SPECIAL SCREW, X2 M2X5 |
| ⚠ | 36 | YQ20184-2-9 | FRONT COVER |
| | 37 | YQM30032-1-2 | SPECIAL SCREW, X2 M2X5 |
| | 38 | YU40986-2-2 | MICROPHONE |
| | 38A | YU40986-001 | WIND SCREEN |
| | 39 | YQM30032-5-2 | SPECIAL SCREW, X3 M2X5 |
| | 42 | SPSG2608Z | SCREW, X3 |
| | 43 | YU40999-2 | CTL-CPU FPC |
| | 44 | SDSF2005Z | SCREW, X2 |
| | 45 | YU41004-2 | AV JACK |
| | 47 | ML-Y00251A-1 | BATTERY WIRE |
| | 48 | SBSF2008Z | SCREW |
| | 50 | YQ40699-5 | PLATE |
| | 51 | YQ41390 | INSULATOR |
| | 52 | YU41275 | SHIELD PLATE |
| | 53 | ML-Y00412 | AV JACK WIRE ASSY |
| | 54 | YQ41444-1-1 | GUIDE PLATE |

## 6.4 CHASSIS ASSEMBLY <M4>



35
35
3
2
UPPER DRUM <30>
7
4
5
46
32
6
MIC AMP <07>
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30B
30B
30A
22
22
22
22
22
22
1
1C
1A
1B
1F
1E
1E
1D
3
42
48
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3
44
47
A
40
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41
41
33
PRE AMP <04>
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34
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37
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8
A
13
12
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23
AUDIO <03>
MECHANISM <M3>
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43
14
S/S <01>
17
15
16
28
21
20
18
Y/C <02>
19
CTL SUB <35>

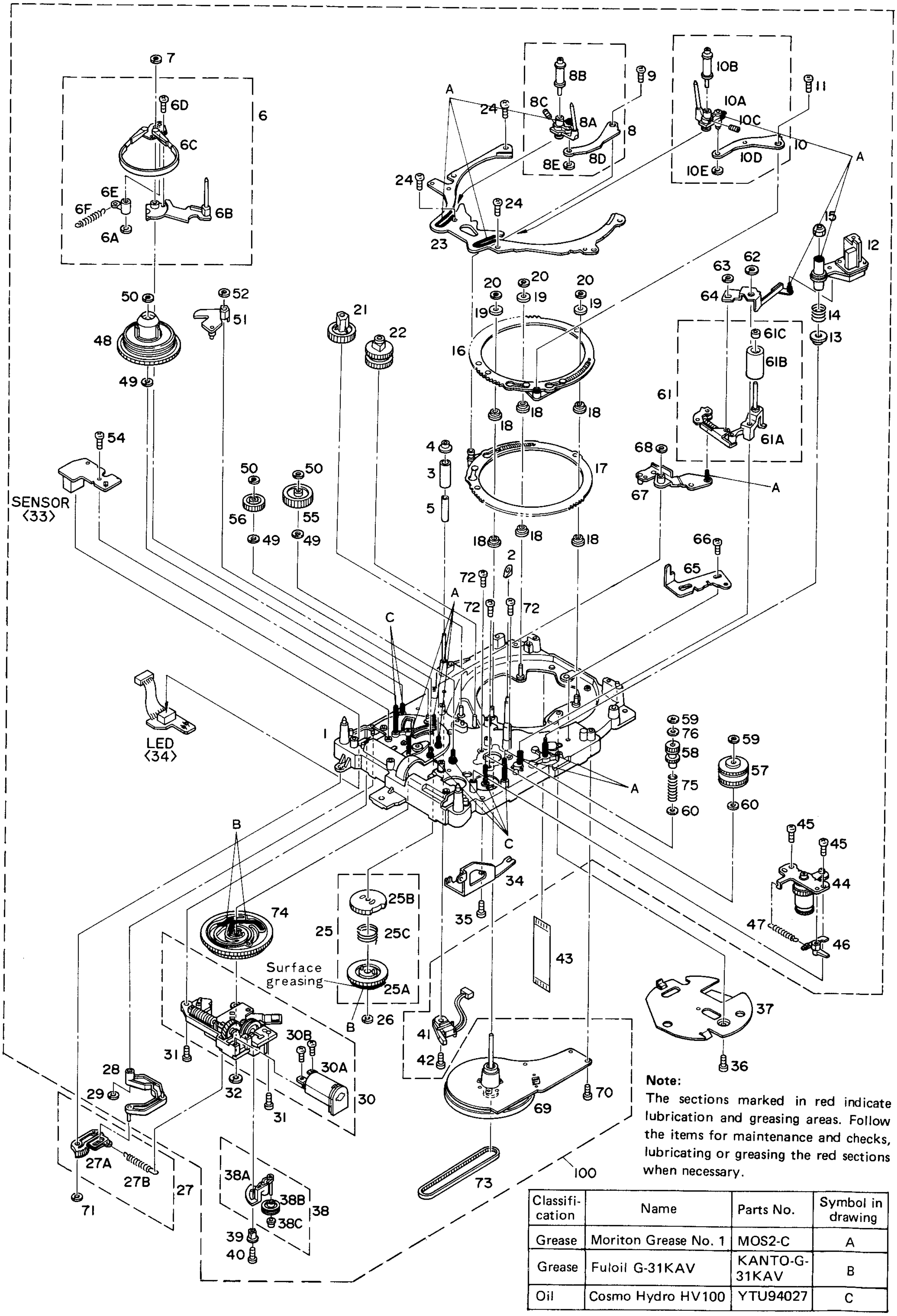
#⚠ REF No. PART No. PART NAME, DESCRIPTION

**⁑ *********************************

## 4. CHASSIS ASSEMBLY ⟨M4⟩

| | | |
|---|---|---|
| 1 | YS20213A-5 | CASSETTE HOUSING ASSY |
| 1A | SPSH1760M | SCREW |
| 1B | YU40001 | DAMPER |
| 1C | YQM30001-31 | TENSION SPRING |
| 1D | YQM30001-33 | TENSION SPRING |
| 1E | YQ41152-1-2 | TENSION SPRING, X2 |
| 1F | YQM30001-38-8 | TENSION SPRING |
| 2 | YDM2037A | UPPER DRUM ASSY |
| 3 | SPSP2608Z | SCREW, X3 |
| 4 | YQ30575 | SHIELD COVER |
| 5 | SPSH1730M | MINI SCREW |
| 6 | YQ30574 | SHIELD CASE |
| 7 | ML-Y00213A-1 | MIC WIRE |
| 8 | YQ41393A-2 | END SENSOR BRACKET ASSY |
| 9 | SPSH1740M | MINI SCREW |
| 10 | YU41071 | DEW SENSOR |
| 11 | SPSH1720M | SCREW |
| 12 | YU40993 | BRUSH |
| 13 | SPSH1720M | MINI SCREW |
| 14 | PQ41450-2 | SCREW |
| 15 | SPSH1730M | MINI SCREW |
| 16 | SPSH1712M | MINI SCREW |
| 17 | SPSN1740M | SCREW |
| 18 | YU41189 | INSULATOR |
| 19 | SPSH1740 | MINI SCREW |
| 20 | YU41000 | VIDEO-BOTTOM FFC |
| 21 | YU41001 | VIDEO-AV JACK FPC |
| 22 | SPSH1730M | SCREW, X5 |
| 23 | ML-Y00214A | MIC AMP WIRE |
| 24 | YU41260 | A/C HEAD FPC CABLE |
| 25 | YU41003-3 | S/S-OPERATION FPC |
| 28 | ML-Y00253B-1 | LOADING MOTOR WIRE |
| 30 | YDM4068A-1 | DRUM BASE ASSY |
| 30A | YDM4064A | ROLLAR BASE ASSY |
| 30B | SPSH1730M | MINI SCREW, X2 |
| 31 | YDM4067A | IMPEDANCE ROLLER ASSY |
| 32 | PQM30017-27 | SLIT WASHER |
| 33 | YDM4052A-1 | LED BRACKET ASSY |
| 34 | YDM3043-1-1 | GUIDE RAIL (1) |
| 35 | NDBP2606N | SCREW, X2 |
| 36 | SPSH1730M | MINI SCREW |
| 37 | SPSH1730M | MINI SCREW, X3 |
| 38 | YDM4058 | SPECIAL SCREW |
| 39 | YDM2027 | HI-FI AUDIO BOARD |
| 40 | YDM4045A | SHIELD PLATE ASSY |
| 41 | SPSP2006Z | SCREW, X3 |
| 42 | YDM2036B | LOWER DRUM MOTOR ASSY |
| 43 | YU41278 | SHIELD PLATE |
| 44 | YU41195 | DC-DC CONVERTER |
| 46 | YQM30050-4 | SPACER |
| 47 | YQ41440 | DOC. BRACKET |
| 48 | SPSH1740M | MINI SCREW, X2 |

## 6.5 MECHANISM ASSEMBLY<M3>


7
6D
6
6C
6E
6F
6B
6A
50
52
51
48
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21
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SENSOR
<33>
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8B
8C
8A
8
9
8E
8D
24
24
23
10B
10A
10C
11
10
10D
10E
A
15
12
20
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20
19
19
19
16
18
18
18
4
3
5
17
18
18
18
2
72
72
72
A
C
63
62
64
14
13
61C
61B
61
61A
68
67
A
66
65
LED
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76
58
75
60
59
57
60
A
C
45
45
44
47
46
B
74
25B
25
25C
Surface
greasing
25A
B
26
34
35
43
37
36
31
30B
30A
30
31
32
28
29
27A
27B
27
71
38A
38B
38
38C
39
40
41
42
69
70
73
100

**Note:**
The sections marked in red indicate lubrication and greasing areas. Follow the items for maintenance and checks, lubricating or greasing the red sections when necessary.

| Classifi-cation | Name | Parts No. | Symbol in drawing |
|---|---|---|---|
| Grease | Moriton Grease No. 1 | MOS2-C | A |
| Grease | Fuloil G-31KAV | KANTO-G-31KAV | B |
| Oil | Cosmo Hydro HV100 | YTU94027 | C |

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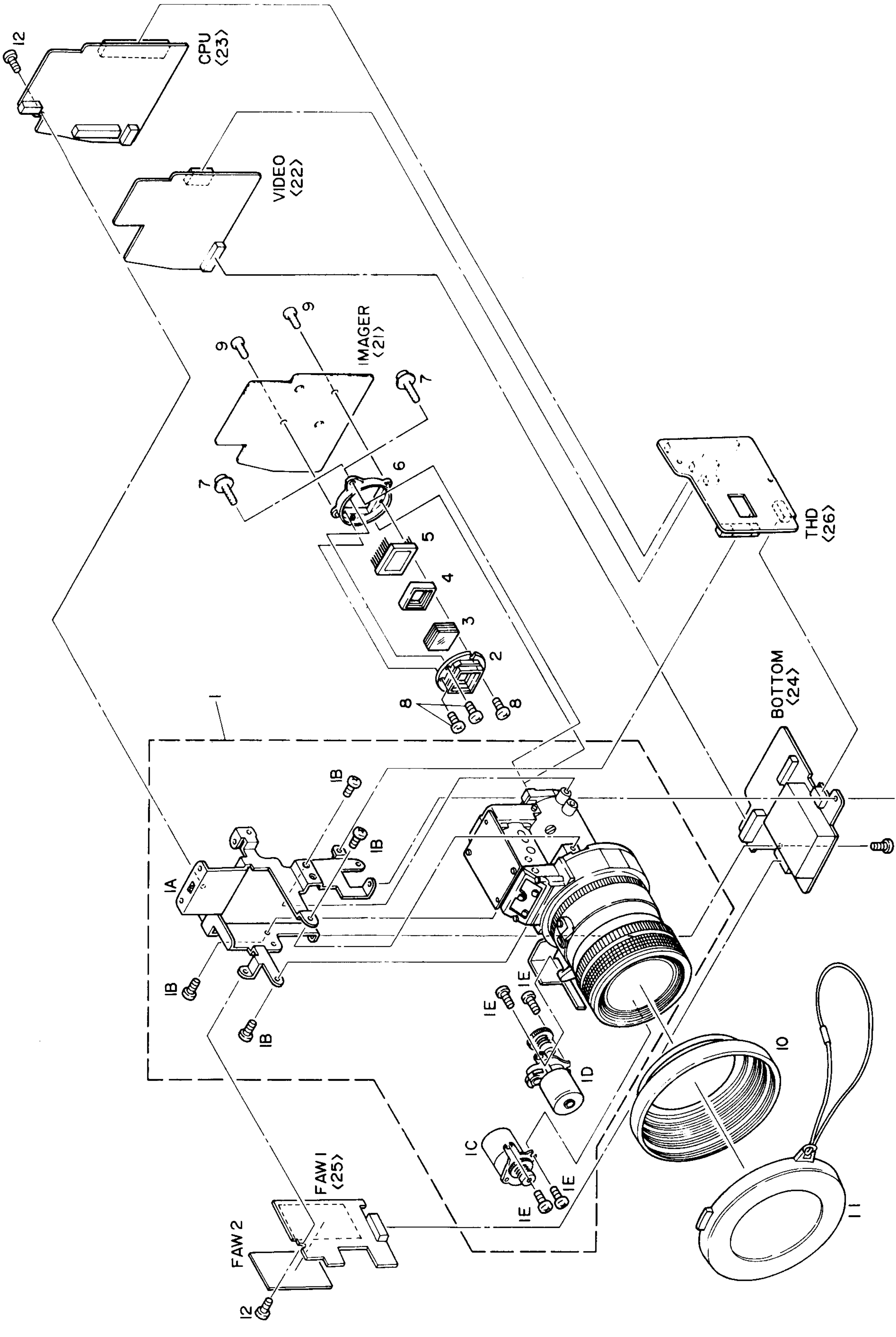
## 3. MECHANISM ASSEMBLY ⟨M3⟩

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|
| | 1 | YQ20194A-8 | MAIN DECK ASSY |
| | 2 | YQ41347 | TAPE GUIDE CAP |
| | 3 | YQ41004 | SUP GUIDE ROLLER |
| | 4 | YQ41005 | SUP FLANGE CAP |
| | 5 | YQ41378 | SUP COLLAR |
| | 6 | YQ41006B | TENSION ARM ASSY |
| | 6A | PQM30017-27 | SLIT WASHER |
| | 6B | YQ41007A | TENSION ARM SUB ASSY |
| | 6C | YQ41010A | TENSION BAND ASSY |
| | 6D | SPSJ1430M | MINI SCREW |
| | 6E | YQ41014 | SPRING HOOK |
| | 6F | YQ41174-1-3 | TENSION SPRING |
| | 7 | PQM30017-27 | SLIT WASHER |
| | 8 | YQ41015A | POLE BASE ASSY (SUPPLY) |
| | 8A | YQ41016A | POLE BASE SA (S) |
| | 8B | YQ41021A | GUIDE ROLLER ASSY (S) |
| | 8C | SPSP1203Z | SET SCREW |
| | 8D | YQ41027 | LOADING ARM |
| | 8E | PQM30017-25 | SLIT WASHER |
| | 9 | PQ41450-2 | SPECIAL SCREW M1.7X2.5 |
| | 10 | YQ41028A-3 | POLE BASE ASSY (TAKE-UP) |
| | 10A | YQ41029A | POLE BASE SA (T) |
| | 10B | YQ41021A | GUIDE ROLLER ASSY (T) |
| | 10C | SPSP1203Z | SET SCREW |
| | 10D | YQ41027 | LOADING ARM |
| | 10E | PQM30017-25 | SLIT WASHER |
| | 11 | PQ41450-2 | SPECIAL SCREW M1.7X2.5 |
| | 12 | YQ41030A-6 | A/C HEAD ARM ASSY |
| | 13 | YQ41035-1-1 | SPRING PLATE |
| | 14 | YQM30002-14-4 | COMPRESSION SPRING |
| | 15 | YQ41142A | NYLON NAT |
| | 16 | YQ41036A-2 | LOADING RING ASSY (S) |
| | 17 | YQ41041A-3 | LOADING RING ASSY (T) |
| | 18 | YQ41045 | COLLAR, X6 |
| | 19 | YQ41046 | FLANGE, X3 |
| | 20 | PQM30017-25 | SLIT WASHER, X3 |
| | 21 | YQ41047-1-2 | RING IDRER GEAR 1 |
| | 22 | YQ41048 | RING IDRER GEAR 2 |
| | 23 | YQ20216-1-3 | GUIDE RAIL |
| | 24 | SPSH1740M | MINI SCREW, X3 |
| | 25 | YQ41168A-2 | LOADING GEAR ASSY |
| | 25A | YQ41049-1-1 | LOADING GEAR 1 |
| | 25B | YQ41050-1-3 | LOADING GEAR 2 |
| | 25C | YQ41051 | TORSION SPRING |
| | 26 | PQM30017-25 | SLIT WASHER |
| | 27 | YQ41211A-4 | EJECT GEAR ASSY |
| | 27A | YQ30399-1-5 | EJECT GEAR |
| | 27B | YQ41212-1-2 | TENSION SPRING |
| | 28 | YQ41423A | EJECT LEVER ASSY |
| | 29 | PQM30017-27 | SLIT WASHER |
| ⚠ | 30 | YU41159-1-1 | GEAR BOX F. ASSY |
| ⚠ | 30A | YU40989V-1 | LOADING MOTOR ASSY |
| | 30B | SPSJ1440M | SCREW, X2 |
| | 31 | SPSH1740M | MINI SCREW, X2 |
| | 32 | PQM30017-25 | SLIT WASHER |
| | 34 | YQ30424-1-2 | AUDIO BOARD BRACKET |
| | 35 | SPSH1740M | MINI SCREW |
| | 36 | SPSH1720M | MINI SCREW |
| | 37 | YQ41126-1-2 | SHIELD PLATE |
| | 38 | YQ41054A | IDRER PULLEY ASSY |
| | 38A | YQ41056 | PULLEY HOLDER |
| | 38B | YQ41057 | IDRER PULLEY |
| | 38C | YQ41058 | PULLEY CAP |
| | 39 | YQ41059 | SCREW WASHER |
| | 40 | SSSJ1410M | SCREW |
| | 41 | YQ41184A | AFTER LOADING SW ASSY |
| | 42 | SDSP2005Z | SCREW |
| | 43 | YU41180 | PRE AMP FFC |
| | 44 | YU40991-1-1 | CENTER PULLEY ASSY |
| | 45 | SPSH1740M | MINI SCREW, X2 |
| | 46 | YQ30406 | TU BRAKE |
| | 47 | YQ41089 | TENSION SPRING |
| | 48 | YU40997-1-1 | SUP REEL DISK ASSY |
| | 49 | Q03093-835 | WASHER, X3 |
| | 50 | PQM30017-27 | SLIT WASHER, X3 |
| | 51 | YQ41079A | CANCEL LEVER ASSY |
| | 52 | PQM30017-27 | SLIT WASHER |
| | 54 | SPSH1730M | MINI SCREW |
| | 55 | YQ41085 | SUP GEAR |
| | 56 | YQ41086 | MIDDLE GEAR |
| | 57 | YU40992-1-1 | TU CLUTCH ASSY |
| | 58 | YQ41342 | TU REEL GEAR |
| | 59 | PQM30017-27 | SLIT WASHER, X2 |
| | 60 | Q03093-835 | WASHER, X2 |
| | 61 | YQ41167A-6 | PINCH ROLLER ARM ASSY |
| | 61A | YQ41069A-4 | PINCH ROLLER ARM ASSY |
| | 61B | YQ40373A | PINCH ROLLER ASSY |
| | 61C | YQ40401 | PINCH ROLLER CAP |
| | 62 | PQM30017-23 | SLIT WASHER |
| | 63 | PQM30017-27 | SLIT WASHER |
| | 64 | YQ41349A-1 | HEAD ARM LEVER ASSY |
| | 65 | YQ41446 | X-PLATE |
| | 66 | YQ41425A-1 | ALOCK SCREW |
| | 67 | YQ41060A-1 | TENSION LEVER ASSY |
| | 68 | PQM30017-25 | SLIT WASHER |
| ⚠ | 69 | YU40990V-1 | CAPSTAN MOTOR |
| | 70 | SPSH1730M | MINI SCREW |
| | 71 | PQM30017-25 | SLIT WASHER |
| | 72 | SPSK1740M | MINI SCREW, X3 |
| | 73 | YQ41084 | TIMING BELT |
| | 74 | YQ20195-1-3 | CONTROL CAM |
| | 75 | YQM30002-17 | COMPRESSION SPRING |
| | 76 | YQM30050-3 | SPACER |
| | 100 | YS20219B | MECHANISM SUB ASSY |

## 6.6 OPTICAL BLOCK ASSEMBLY <M5>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1B
1E
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1D
1C
1E
1E
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FAW1
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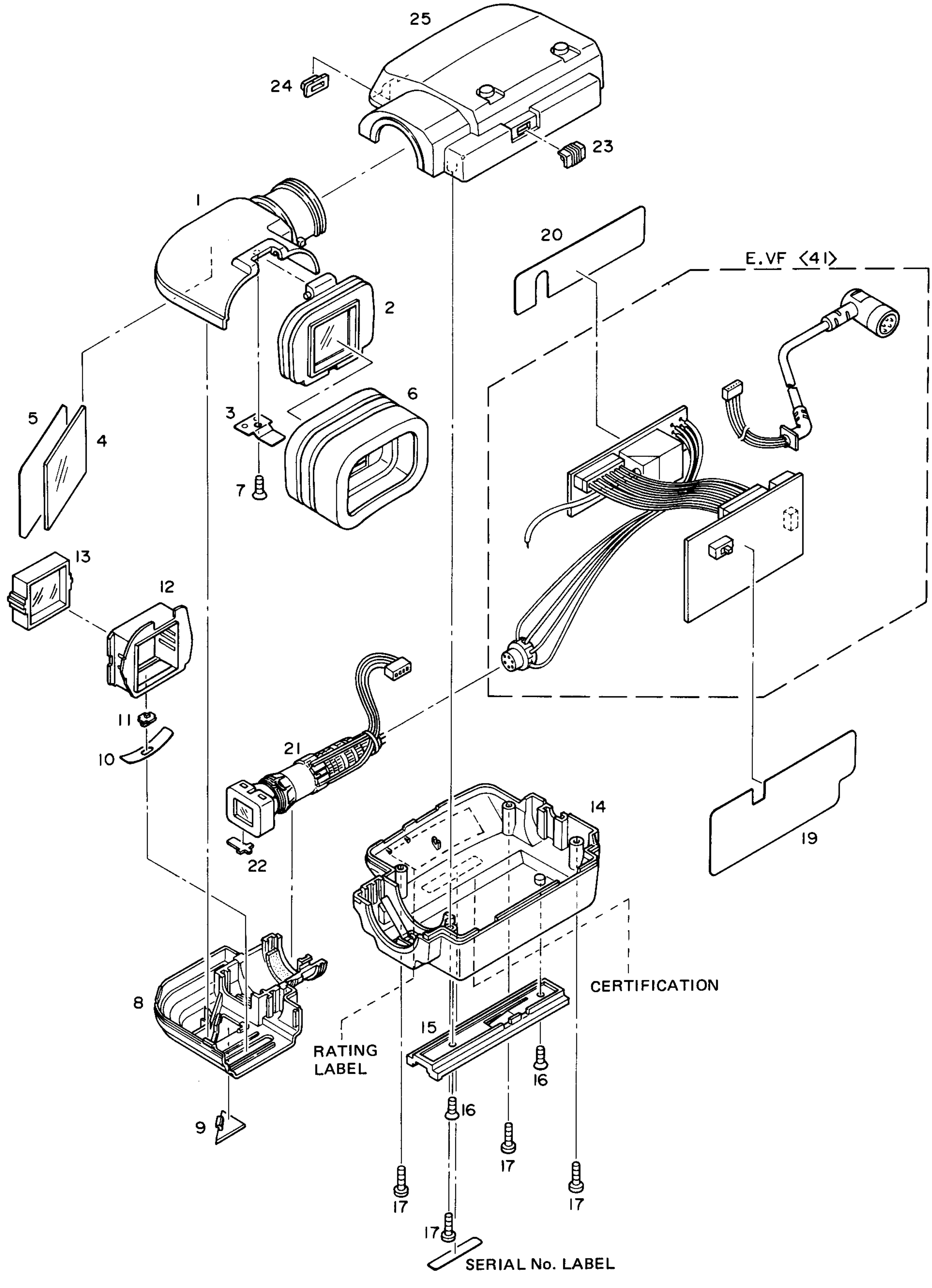
FAW2
12
BOTTOM
<24>
12
12
THD
<26>

## 5. OPTICAL BLOCK ASSEMBLY ⟨M5⟩

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|
| ⚠ | 1 | YU40835-2-2 | OPTICAL BLOCK ASSY |
| ⚠ | | or YU40835-4 | OPTICAL BLOCK ASSY |
| | 1A | YQ20193A-2 | LENS BRACKET |
| | 1B | SDSG2606Z | SCREW, X4 |
| | 1C | YU40835-001 | AF MOTOR ASSY |
| | 1D | YU40835-002 | ZOOM MOTOR ASSY |
| | 1E | YU40835-003 | SPECIAL SCREW, X4 M2.5X4.5 |
| | 2 | YQ30096-2 | OPTICAL LPF HOLDER |
| | 3 | YU41326 | OPTICAL LPF |
| | 4 | PQ42339 | SPACER RUBBER |
| ⚠ | 5 | UPD3556D-A | IC (CCD) |
| | 6 | YQ30421-1-1 | IMAGER HOLDER |
| | 7 | DPSP2008Z | SCREW, X2 |
| | 8 | SPSK2004F | MINI SCREW, X3 |
| | 9 | SPSP2004Z | SCREW, X2 |
| | 10 | YQ41114-1-1 | LENS HOOD |
| | 11 | YQ40943A-4 | LENS CAP ASSY |
| | 12 | SPSP2004Z | SCREW, X4 |

## 6.7 ELECTRONIC VIEWFINDER ASSEMBLY <M6>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14
19
8
15
CERTIFICATION
RATING
LABEL
16
16
9
17
17
17
17
SERIAL No. LABEL

#⚠ REF No. PART No. PART NAME, DESCRIPTION

**※※※※※※※※※※※※※※※※※※※※※※※※※※※※※※※※※※※※**

## 6. ELECTRONIC VIEWFINDER ASSEMBLY ⟨M6⟩

| | | |
|---|---|---|
| 1 | YU30236-001 | OUTSIDE HOLDER (T) |
| 2 | YU30236-002 | UP LIFT |
| 3 | YU30236-003 | PLATE SPRING |
| 4 | YU30236-004 | MIRROR |
| 5 | YU30236-005 | INSULATOR (1) |
| 6 | YU30236-006 | EYE CAP |
| 7 | YU30236-007 | SCREW |
| 8 | YU30236-008 | OUTSIDE HOLDER (B) |
| 9 | YU30236-009 | COVER |
| 10 | YU30236-010 | PLASTIC SEAT |
| 11 | YU30236-011 | KNOB |
| 12 | YU30236-012 | HOLDER |
| 13 | YU30236-013 | LENS HOLDER |
| 14 | YU30236-014 | BOTTOM CASE |
| 15 | YU30236-015 | SHOW |
| 16 | YU30236-016 | SCREW, X2 |
| 17 | YU30236-017 | SCREW, X4 |
| 19 | YU30236-018 | INSULATOR (2) |
| 20 | YU30236-019 | INSULATOR (3) |
| 21 | YU30236-020 | CRT/DY ASSY |
| 22 | YU30181-014 | HIGH VOLTAGE COVER |
| 23 | YU30236-021 | TALLY KNOB |
| 24 | YU30236-022 | LED COVER |
| 25 | YU30236-033 | TOP CASE (PAL) |

# SECTION 7
# ELECTRICAL PARTS LIST

## SAFETY PRECAUTION

**Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.**

## ABBREVIATIONS USED IN THIS PARTS LIST

| | |
|---|---|
| RESISTORS | : All resistance values are in ohms (Ω), unless otherwise indicated. |
| k | : 1,000 (Kilo) |
| M | : 1,000,000 (Mega) |

| | |
|---|---|
| RESISTOR | : Resistor<br>Carbon resistor<br>Chip resistor<br>Double chip resistor |
| FUSIBLE RESISTOR | : Fusible resistor |
| MF RESISTOR | : Metal film resistor |
| MP RESISTOR | : Metal plate resistor |
| OMF RESISTOR | : Oxide metal film resistor |
| V RESISTOR | : Variable resistor<br>Chip variable resistor |

| | |
|---|---|
| CAPACITORS | : All capacitance values are in μF, unless otherwise indicated. |
| pF | : Picofarad ($10^{-6}$ μF) |

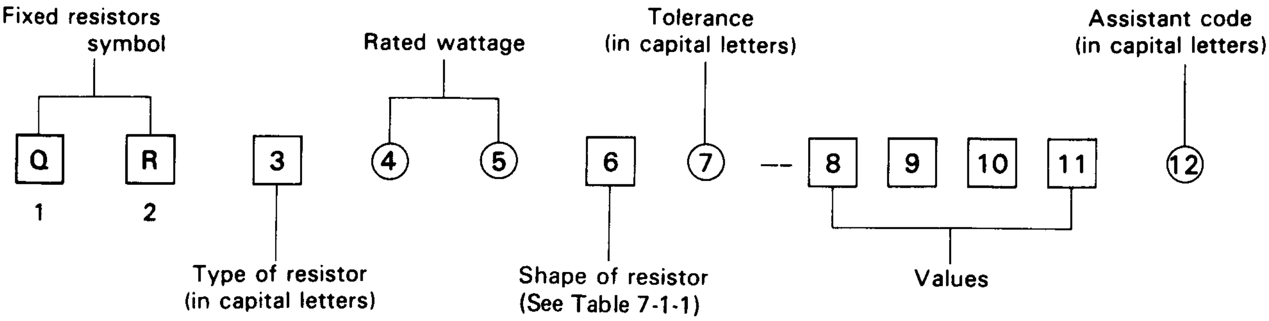
| | |
|---|---|
| CAPACITOR | : Capacitor<br>Ceramic capacitor<br>Chip capacitor |
| E CAPACITOR | : Electrolytic capacitor<br>Chip electrolytic capacitor |
| FM CAPACITOR | : Film Mica capacitor |
| M CAPACITOR | : Mylar capacitor |
| MM CAPACITOR | : Metalized mylar capacitor<br>Metalized paper capacitor |
| NP E CAPACITOR | : Non-polar electrolytic capacitor<br>Non-polar capacitor |
| PP CAPACITOR | : Polypropylene capacitor |
| TANTAL CAPACITOR | : Tantalum capacitor<br>Chip tantalum capacitor |
| TF CAPACITOR | : Thin film capacitor |
| TRIMMER CAPACITOR | : Trimmer capacitor<br>Chip trimmer capacitor |

**Notes:**
- <2 digits> indicates circuit board symbol number.
- "X " indicates quantity per set.

## 7.1 STANDARD PART NUMBER CODING

### 7.1.1 Fixed resistor coding

**Fixed resistor part numbers are as follows.**


Fixed resistors symbol
Rated wattage
Tolerance (in capital letters)
Assistant code (in capital letters)
Q
R
3
④
⑤
6
⑦
—
8
9
10
11
⑫
1
2
Type of resistor (in capital letters)
Shape of resistor (See Table 7-1-1)
Values

**Type of resistor (third digit)**

| | |
|---|---|
| C | Composition resistors |
| D | Carbon resistors |
| F | Unflammable resistors |
| G | Oxide metal film resistors |
| H | Fusible resistors |
| M | Metal plate resistors |
| S | Metal glazed resistors |
| V | Precision metal film resistors |
| W | Wire wound resistors |
| X | Metal film resistors |
| Z | Special resistors |
| B | Network resistors |

**Notes:** first—third digits
NR□ : Chip resistors
QVP : Variable resistors
NVP : Chip variable resistors
NRB : Chip network resistors

**Rated wattage (fourth and fifth digits)**

| | |
|---|---|
| A0 | 1/10 W |
| 18 | 1/8 W |
| 16 | 1/6 W |
| 14 | 1/4 W |
| 12 | 1/2 W |
| 01 | 1 W |
| 02 | 2 W |
| 03 | 3 W |
| 04 | 4 W |
| 05 | 5 W |
| 06 | 6 W |
| 07 | 7 W |
| 75 | 7.5 W |
| 08 | 8 W |
| 10 | 10 W |
| 15 | 15 W |
| A6 | 16 W |
| 20 | 20 W |
| 30 | 30 W |

**Tolerance (seventh digit)**

| | |
|---|---|
| F | ±1 % |
| G | ±2 % |
| J | ±5 % |
| K | ±10 % |
| M | ±20 % |
| S | +20/−10% |

**Assistant code (twelfth digit)**

| | |
|---|---|
| A | Small type |
| B | Small type |
| S | Small type |
| Y | Lead tapping |
| Z | Lead tapping |

**Values (eighth — tenth or eleventh digits)**

examples:

| | | |
|---|---|---|
| R47 | | 0.47 Ω |
| 4R7 | | 4.7 Ω |
| 470 | $47 \times 10^0$ | 47 Ω |
| 471 | $47 \times 10^1$ | 470 Ω |
| 472 | $47 \times 10^2$ | 4.7 kΩ |
| 473 | $47 \times 10^3$ | 47 kΩ |
| 474 | $47 \times 10^4$ | 470 kΩ |
| 475 | $47 \times 10^5$ | 4.7 MΩ |

QRV resistance shown by four digits:

| | | |
|---|---|---|
| 4640 | $464 \times 10^0$ | 464 Ω |
| 4641 | $464 \times 10^1$ | 4.64 kΩ |
| 4642 | $464 \times 10^2$ | 46.4 kΩ |

**Shape of resistor (sixth digit)**

**Note:** ▬ indicates flame retardant resistor.

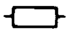
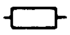
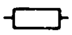
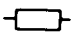
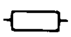
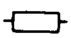
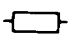
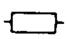
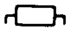
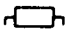
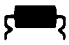
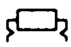
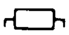
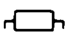
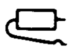
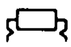
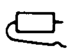
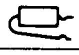
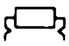
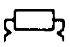
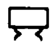
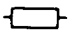
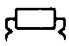
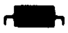
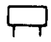
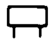
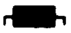
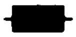
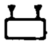
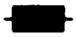
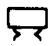
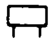
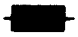
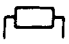
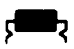
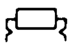
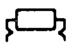
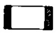
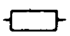
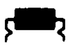
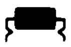
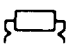
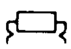
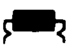
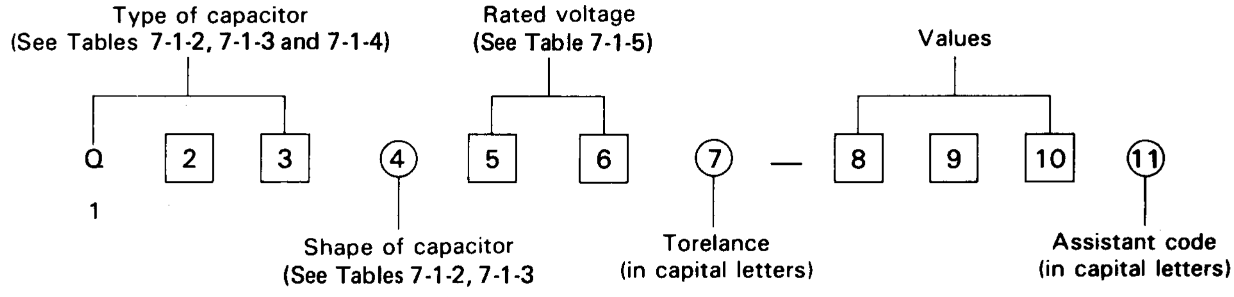
| Type of resistor / Shape of resistor | C | D | F | G | H | M | S | V | W | X |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 |  |  |  |  |  | |  |  |  | |
| 2 |  |  | |  |  | |  |  | | |
| 3 | |  | |  | | | |  | | |
| 4 | |  | |  |  |  | |  | | |
| 5 | |  | |  | |  |  | | (L) type |  |
| 6 | |  |  |  | |  | |  | |  |
| 7 | |  | Lug<br>(B) type | | | | | | |  |
| 8 |  |  | Lug<br>(A) type | | | | <br>Chip | | |  |
| 9 | |  | Lug<br>(C) type |  |  | |  | | |  |

Table 7-1-1

### 7.1.2 Fixed capacitor coding

**Fixed capacitor part numbers are as follows.**


Type of capacitor
(See Tables 7-1-2, 7-1-3 and 7-1-4)
Rated voltage
(See Table 7-1-5)
Values
Q
1
2
3
④
5
6
⑦
—
8
9
10
⑪
Shape of capacitor
(See Tables 7-1-2, 7-1-3
and 7-1-4)
Torelance
(in capital letters)
Assistant code
(in capital letters)

**Ceramic capacitors**

| Type of capacitor (first — third digits) | | Shape of capacitor (fourth digit) | | | | |
|---|---|---|---|---|---|---|
| Symbol | Characteristics | Mono-direction | Kink lead | Axial straight lead | Axial forming lead | Chip |
| QCB | Ceramic | | | B | C | |
| QCC | Ceramic | 1 | 3 | 4 | 5 | |
| QCD | High capacitance | | | B | | 8,A |
| QCF | High capacitance | 1,4 | 3 | B | | 8,A |
| QCS | Temperature compensation | 1 | 3 | 4,B | 5,C | 8,A |
| QCT | Temperature compensation | Special coding | | | | 8,A |
| QCV | Ceramic | | | 1,B | 3,C | |
| QCX | Ceramic | | | 1,B | 3,C | |
| QCY | High capacitance | 1,4,5 | 3 | 6 | 7 | 8,A |
| QCZ | Special type | Special coding | | | | |

**Table 7-1-2**

**Electrolytic capacitors**

| Type of capacitor (first — third digits) | | Shape of capacitor (fourth digit) | | | | |
|---|---|---|---|---|---|---|
| Symbol | Characteristics | Tubular | Mono-direction | Anti-stress | Forming | Snap-in |
| QEB | Low leakage | | 4 | 5 | 6 | |
| QEC | Low leakage | | 4,8,A | 5,B | 6,C | 9 |
| QED | Miniature type | | 4 | 5 | 6 | |
| QEE | Tantalum (normal) | | 4 | 5 | 6 | |
| | Tantalum (small) | | 8 | | | |
| QEF | Chip tantalum | 8 (chip type) | | | | |
| QEG | Low impedance | | 4 | | | |
| QEK | Miniature type (ϕ5) | | 4,A | 5,B | 6,C | 7 |
| QEL | Small type | | | | 6 | 7 |
| QEM | Small type | | 4,A | 5,B | 6,C | |
| QEN | Non-polar | 2 | 4 | 5 | 6 | 7 |
| QEP | Non-polar (small) | 2 | 4,A | 5,B | 6,C | 7 |
| QER | Miniature type | | 4 | 5 | 6 | 7 |
| QET | Normal | 2 | 4,A | 5,B | 6,C | 7 |
| QEU | Small type | | 4 | 5 | 6 | 7 |
| QEV | Small type | | 4 | 5 | 6 | 7 |
| QEW | Normal | 2 | 4 | 5 | 6 | 7 |
| QEZ | Special type | Special coding | | | | |

**Table 7-1-3**

**Paper film capacitors**

| Type of capacitor (first — third digits) | | Shape of capacitor (fourth digit) | | | | |
|---|---|---|---|---|---|---|
| | | Tubular | Normal | | Flame retardant | |
| Symbol | Characteristics | | Mono-direction | Kink lead | Mono-direction | Kink lead |
| QFA | Metalized polypropylene | 2 | 7 | | | |
| QFE | Metalized mylar | | | | 5 | |
| QFF | Film mica | | 4 | | | |
| QFG | Polypropylene | | 4 | 8 | | |
| QFH | Metalized mylar | 2 | 4,7,9 | 3,8 | 5 | 6 |
| QFJ | Mylar (special) | | 4 | | | |
| QFK | Metalized mylar (small) | | | | 5 | |
| QFM | Mylar | 2 | 4 | 3,7,8 | 5 | 6 |
| QFN | Mylar (small) | | 4 | 3,8 | | |
| QFP | Polypropylene | | 4 | 3,8 | | |
| QFS | Polystyrole | 2 | 4 | 3,8 | | |
| QFV | Thin film | | 4 | 7,8 | | |
| QFZ | Special type | Special coding | | | | |

Table 7-1-4

**Rated voltage (fifth and sixth digits)**

| Sixth digit / Fifth digit | A | B | C | D | E | F | G | H | J | K | P | V | W | X |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | 3.15 | 4.0 | 5(5.5) | 6.3 | | | | | |
| 1 | 10 | 12 | 16 | 20 | 25 | | 40 | 50 | 63 | 80 | | 35 | | |
| 2 | 100 | 125 | 160 | 200 | 250 | 315 | 400 | 500 | 630 | 800 | 180 | 350 | 450 | 600 |
| 3 | 1000 | 1250 | | 2000 | | | | 5000 | | | | | | |

Table 7-1-5

**Tolerance (seventh digit)**

| | | | |
|---|---|---|---|
| A | ${}^{+100}_{-10}$ % | M | ± 20 % |
| F | ± 1 % | N | ± 30 % |
| G | ± 2 % | P | ${}^{+100}_{-0}$ % |
| H | ${}^{+50}_{-10}$ % | R | ${}^{+30}_{-10}$ % |
| J | ± 5 % | X | ${}^{+40}_{-20}$ % |
| K | ± 10 % | Z | ${}^{+80}_{-20}$ % |

**Values (eighth — tenth digits)**

Example : Values are in picofarads

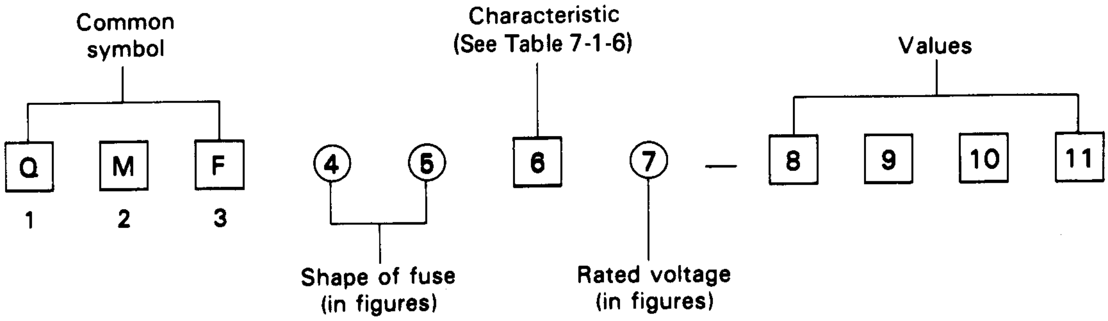
| | | |
|---|---|---|
| R10 | | 0.1 pF |
| 1R0 | | 1.0 pF |
| 100 | $10\times10^0$pF | 10 pF |
| 101 | $10\times10^1$ pF | 100 pF |
| 102 | $10\times10^2$ pF | 1,000 pF (0.001 μF) |
| 103 | $10\times10^3$ pF | 10,000 pF (0.01 μF) |
| 104 | $10\times10^4$ pF | 100,000 pF (0.1 μF) |
| 105 | $10\times10^5$ pF | 1 μF |
| 106 | $10\times10^6$ pF | 10 μF |

**Assistant code (eleventh digit)**

| | | | |
|---|---|---|---|
| A | Small size | X | Tapping |
| G | Small size | Y | Lead tapping |
| W | Tapping or Forming | Z | Lead tapping |

### 7.1.3 Fuse coding

**Standard fuse part numbers are as follows.**


Common symbol
Characteristic (See Table 7-1-6)
Values
Q
M
F
1
2
3
4
5
6
7
—
8
9
10
11
Shape of fuse (in figures)
Rated voltage (in figures)

**Shape of fuse**
**(fourth and fifth digits)**

| | |
|---|---|
| 51 | $\phi$5.2 × 20 mm |
| 53 | $\phi$5.2 × 20 mm with lead wires |
| 60 | $\phi$6.4 × 30 mm |
| 61 | $\phi$6.35 × 31.8 mm |
| 63 | $\phi$6.4 × 30 mm with lead wires |
| 66 | $\phi$6.35 × 31.8 mm with lead wires |
| 00 | Special type |

**Rated voltage**
**(seventh digit)**

| | |
|---|---|
| 1 | AC125 V |
| 2 | AC250 V |

**Values**
**(eighth-tenth or eleventh digits)**
example:
R315 ......... 0.315 A
R63 ......... 0.63 A
1R0 ......... 1.0 A
1R25 ......... 1.25 A
2R5 ......... 2.5 A
100 ......... 10 A

**Characteristics (sixth digit)**

| Symbol | Fusing Current | Fusing Time | Remarks |
|---|---|---|---|
| A | 210 % | Within 2 min. | Anti-rush type (for CB and SEMKO) |
| | 275 % | 0.6 – 10 sec. | |
| | 400 % | 0.15 – 3 sec. | |
| | 1000 % | 0.02 – 0.3 sec. | |
| B | 210 % | Within 30 min. | Regular fusible type (for SEMKO and CB) |
| | 275 % | 0.05 – 2 sec. | |
| | 400 % | 0.01 – 0.3 sec. | |
| C | 135 % | Within 1 hr. | Regular fusible type (for UL, CSA and Japan) |
| | 200 % | Within 2 min. | |
| E | 210 % | Within 2 min. | Anti-rush type (for Europe) |
| | 275 % | 0.6 – 10 sec. | |
| | 400 % | 0.15 – 3 sec. | |
| | 1000 % | 0.02 – 0.3 sec. | |
| J | 135 % | Within 1 hr. | Anti-rush type (for UL, CSA and Japan) |
| | 200 % | Within 2 min. | |
| M | 135 % | Within 1 hr. | Regular fusible type (for UL and CSA) |
| | 200 % | Within 2 min. | |
| R | 160 % | Within 1 hr. | Regular fusible type (for Japan) |
| | 200 % | Within 2 min. | |
| S | 135 % | Within 1 hr. | Anti-rush type (for Japan) |
| | 200 % | Within 2 min. | |
| U | 135 % | Within 1 hr. | Anti-rush type (for UL and CSA) |
| | 200 % | Within 2 min. | |

**Table 7-1-6**

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|

* * *

## 7. S/S BOARD ASSEMBLY ⟨01⟩

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|
| | PWBA | YB10044A-04 | S/S BOARD ASSY |
| | IC1 | M37405E5-195FP | IC |
| | or | M37405M5-110FP | IC |
| | IC2 | TC4S584F | IC |
| | IC4 | S-8054HN | IC |
| | IC5 | M54543ASL | IC |
| | IC6 | TC4S69F | IC |
| | IC7 | TC4S69F | IC |
| | IC8 | BA10324F | IC |
| | or | XRA10324F | IC |
| | IC9 | BA10324F | IC |
| | or | XRA10324F | IC |
| | IC10 | AFZ72F25A5 | IC |
| | IC201 | S-81252HG | IC |
| | IC202 | M5236ML | IC |
| | IC301 | VC5026G | IC |
| | IC401 | VC5035 | IC |
| | IC402 | BA10339F | IC |
| | IC501 | M51798FP | IC |
| | IC502 | IR3F01N | IC |
| | Q1 | DTA144EK | TRANSISTOR |
| | Q2 | DTC144EK | TRANSISTOR |
| | Q4 | 2SA1037K(QR) | TRANSISTOR |
| | Q5 | DTA124EK | TRANSISTOR |
| | Q6 | 2SC2412K(QR) | TRANSISTOR |
| | Q8 | DTA124EK | TRANSISTOR |
| | Q9 | DTC124EK | TRANSISTOR |
| | Q10 | DTC124EK | TRANSISTOR |
| | Q11 | DTC124EK | TRANSISTOR |
| | Q12 | DTC124EK | TRANSISTOR |
| | Q13 | DTC144WK | TRANSISTOR |
| | Q14 | DTA124EK | TRANSISTOR |
| | Q15 | DTC124EK | TRANSISTOR |
| | Q16 | DTC144EK | TRANSISTOR |
| | Q17 | DTC124EK | TRANSISTOR |
| | Q18 | DTC124EK | TRANSISTOR |
| | Q201 | DTA143ZK | TRANSISTOR |
| | Q202 | 2SB1132(QR) | TRANSISTOR |
| | Q203 | 2SB766(QR) | TRANSISTOR |
| | Q204 | 2SJ146 | FE TRANSISTOR |
| | Q301 | 2SB798 | TRANSISTOR |
| | Q302 | 2SB798 | TRANSISTOR |
| | Q303 | 2SB798 | TRANSISTOR |
| | D2 | DAN202K | DIODE |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | D3 | DAP202K | DIODE ARRAY | |
| | D4 | DAN202K | DIODE | |
| | D5 | DAN202K | DIODE | |
| | D6 | DAN202K | DIODE | |
| | D201 | ERA81-004 | DIODE | |
| | D202 | 1SS133 | DIODE | |
| | D203 | FMN1 | DIODE | |
| | D204 | RD20EB2 | ZENER DIODE | |
| | D401 | DAN202K | DIODE | |
| | D501 | DA204K | DIODE | |
| | D503 | DAN202K | DIODE | |
| | D504 | DAN202K | DIODE | |
| | D505 | DAN202K | DIODE | |
| | D506 | DAN202K | DIODE | |
| | DS1 | YU41318 | REEL SENSOR BRACKET ASSY | |
| | R1 | QRSA08J-0R0Y | RESISTOR | 0Ω, 1/10W |
| | R2 | QRSA08J-0R0Y | RESISTOR | 0Ω, 1/10W |
| | R3 | QRSA08J-0R0Y | RESISTOR | 0Ω, 1/10W |
| | R4 | QRSA08J-103YN | RESISTOR | 10KΩ, 1/10W |
| | R5 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R6 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R7 | NVP1301-473N | V RESISTOR, PB SW POINT | 47KΩ |
| | R8 | QRSA08J-273YN | RESISTOR | 27KΩ, 1/10W |
| | R9 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R10 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R11 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R12 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R13 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R14 | QRSA08J-682YN | RESISTOR | 6.8KΩ, 1/10W |
| | R15 | QRSA08J-103YN | RESISTOR | 10KΩ, 1/10W |
| | R16 | QRSA08J-103YN | RESISTOR | 10KΩ, 1/10W |
| | R17 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R18 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R19 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R20 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R22 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R23 | QRSA08J-101YN | RESISTOR | 100Ω, 1/10W |
| | R24 | QRSA08J-103YN | RESISTOR | 10KΩ, 1/10W |
| | R25 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R26 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R27 | QRSA08J-473YN | RESISTOR | 47KΩ, 1/10W |
| | R28 | QRSA08J-222YN | RESISTOR | 2.2KΩ, 1/10W |
| | R29 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R30 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R31 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R32 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R33 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R34 | QRSA08J-0R0Y | RESISTOR | 0Ω, 1/10W |
| | R35 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R36 | QRSA08J-222YN | RESISTOR | 2.2KΩ, 1/10W |
| | R37 | QRSA08J-222YN | RESISTOR | 2.2KΩ, 1/10W |
| | R38 | QRSA08J-332YN | RESISTOR | 3.3KΩ, 1/10W |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | R39 | QRSA08J-333YN | RESISTOR | 33KΩ, 1/10W |
| | R40 | QRSA08J-103YN | RESISTOR | 10KΩ, 1/10W |
| | R41 | QRSA08J-105YN | RESISTOR | 1MΩ, 1/10W |
| | R42 | QRSA08J-101YN | RESISTOR | 100Ω, 1/10W |
| | R43 | QRSA08J-0R0Y | RESISTOR | 0Ω, 1/10W |
| | R44 | QRSA08J-101YN | RESISTOR | 100Ω, 1/10W |
| | R45 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R46 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R47 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R48 | QRSA08J-101YN | RESISTOR | 100Ω, 1/10W |
| | R49 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R50 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R51 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R52 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R53 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R54 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R55 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R56 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R57 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R58 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R59 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R60 | QRSA08J-101YN | RESISTOR | 100Ω, 1/10W |
| | R61 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R62 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R63 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R64 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R65 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R66 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R67 | QRSA08J-472YN | RESISTOR | 4.7KΩ, 1/10W |
| | R68 | QRSA08J-0R0Y | RESISTOR | 0Ω, 1/10W |
| | R69 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R70 | QRSA08J-681YN | RESISTOR | 680Ω, 1/10W |
| | R71 | QRSA08J-103YN | RESISTOR | 10KΩ, 1/10W |
| | R72 | QRSA08J-103YN | RESISTOR | 10KΩ, 1/10W |
| | R73 | QRSA08J-103YN | RESISTOR | 10KΩ, 1/10W |
| | R74 | QRSA08J-104YN | RESISTOR | 100KΩ, 1/10W |
| | R75 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R76 | QRSA08J-473YN | RESISTOR | 47KΩ, 1/10W |
| | R77 | QRSA08J-473YN | RESISTOR | 47KΩ, 1/10W |
| | R78 | QRSA08J-224YN | RESISTOR | 220KΩ, 1/10W |
| | R79 | QRSA08J-104YN | RESISTOR | 100KΩ, 1/10W |
| | R80 | QRSA08J-104YN | RESISTOR | 100KΩ, 1/10W |
| | R81 | QRSA08J-104YN | RESISTOR | 100KΩ, 1/10W |
| | R82 | QRSA08J-105YN | RESISTOR | 1MΩ, 1/10W |
| | R83 | QRSA08J-105YN | RESISTOR | 1MΩ, 1/10W |
| | R84 | QRSA08J-683YN | RESISTOR | 68KΩ, 1/10W |
| | R85 | QRSA08J-184YN | RESISTOR | 180KΩ, 1/10W |
| | R86 | QRSA08J-563YN | RESISTOR | 56KΩ, 1/10W |
| | R87 | QRSA08J-154YN | RESISTOR | 150KΩ, 1/10W |
| | R88 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R89 | QRSA08J-274YN | RESISTOR | 270KΩ, 1/10W |
| | R90 | QRSA08J-393YN | RESISTOR | 39KΩ, 1/10W |
| | R91 | QRSA08J-224YN | RESISTOR | 220KΩ, 1/10W |
| | R92 | QRSA08J-332YN | RESISTOR | 3.3KΩ, 1/10W |
| | R93 | QRSA08J-684YN | RESISTOR | 680KΩ, 1/10W |
| | R94 | QRSA08J-393YN | RESISTOR | 39KΩ, 1/10W |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | R95 | QRSA08J-223YN | RESISTOR | 22KΩ, 1/10W |
| | R96 | QRSA08J-224YN | RESISTOR | 220KΩ, 1/10W |
| | R97 | QRSA08J-333YN | RESISTOR | 33KΩ, 1/10W |
| | R98 | QRSA08J-103YN | RESISTOR | 10KΩ, 1/10W |
| | R99 | QRSA08J-103YN | RESISTOR | 10KΩ, 1/10W |
| | R100 | QRSA08J-153YN | RESISTOR | 15KΩ, 1/10W |
| | R101 | QRSA08J-333YN | RESISTOR | 33KΩ, 1/10W |
| | R102 | QRSA08J-333YN | RESISTOR | 33KΩ, 1/10W |
| | R103 | QRSA08J-153YN | RESISTOR | 15KΩ, 1/10W |
| | R104 | QRSA08J-473YN | RESISTOR | 47KΩ, 1/10W |
| | R105 | QRSA08J-561YN | RESISTOR | 560Ω, 1/10W |
| | R106 | QRSA08J-103YN | RESISTOR | 10KΩ, 1/10W |
| | R107 | QRSA08J-182YN | RESISTOR | 1.8KΩ, 1/10W |
| | R108 | QRSA08J-223YN | RESISTOR | 22KΩ, 1/10W |
| | R109 | QRSA08J-223YN | RESISTOR | 22KΩ, 1/10W |
| | R110 | QRSA08J-223YN | RESISTOR | 22KΩ, 1/10W |
| | R111 | QRSA08J-223YN | RESISTOR | 22KΩ, 1/10W |
| | R112 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R113 | QRSA08J-103YN | RESISTOR | 10KΩ, 1/10W |
| | R114 | QRSA08J-223YN | RESISTOR | 22KΩ, 1/10W |
| | R115 | QRSA08J-223YN | RESISTOR | 22KΩ, 1/10W |
| | R116 | QRSA08J-223YN | RESISTOR | 22KΩ, 1/10W |
| | R117 | QRSA08J-103YN | RESISTOR | 10KΩ, 1/10W |
| | R118 | QRSA08J-223YN | RESISTOR | 22KΩ, 1/10W |
| | R119 | QRSA08J-273YN | RESISTOR | 27KΩ, 1/10W |
| | R120 | QRSA08J-223YN | RESISTOR | 22KΩ, 1/10W |
| | R121 | QRSA08J-104YN | RESISTOR | 100KΩ, 1/10W |
| | R125 | QRSA08J-103YN | RESISTOR | 10KΩ, 1/10W |
| | R201 | QRD162J-104 | RESISTOR | 100KΩ, 1/6W |
| | R202 | QRSA08J-472YN | RESISTOR | 4.7KΩ, 1/10W |
| | R203 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R204 | NRVA62D-223N | RESISTOR | 22KΩ, 1/16W |
| | R205 | QRSA08J-0R0Y | RESISTOR | 0Ω, 1/10W |
| | R206 | NRVA62D-133N | RESISTOR | 13KΩ, 1/16W |
| | R207 | QRSA08J-221YN | RESISTOR | 220Ω, 1/10W |
| | R208 | QRSA08J-105YN | RESISTOR | 1MΩ, 1/10W |
| | R209 | QRSA08J-822YN | RESISTOR | 8.2KΩ, 1/10W |
| | R210 | NVP1301-102N | V RESISTOR, REG 8V | 1KΩ |
| | R211 | QRSA08J-123YN | RESISTOR | 12KΩ, 1/10W |
| | R212 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R213 | QRSA08J-824YN | RESISTOR | 820KΩ, 1/10W |
| | R301 | QRSA08J-560YN | RESISTOR | 56Ω, 1/10W |
| | R302 | QRSA08J-560YN | RESISTOR | 56Ω, 1/10W |
| | R304 | QRSA08J-2R2YN | RESISTOR | 2.2Ω, 1/10W |
| | R305 | QRSA08J-2R2YN | RESISTOR | 2.2Ω, 1/10W |
| | R306 | QRSA08J-2R2YN | RESISTOR | 2.2Ω, 1/10W |
| | R307 | QRSA08J-103YN | RESISTOR | 10KΩ, 1/10W |
| | R308 | QRSA08J-103YN | RESISTOR | 10KΩ, 1/10W |
| | R309 | QRSA08J-103YN | RESISTOR | 10KΩ, 1/10W |
| | R310 | QRSA08J-183YN | RESISTOR | 18KΩ, 1/10W |
| | R311 | QRSA08J-683YN | RESISTOR | 68KΩ, 1/10W |
| | R401 | QRSA08J-2R2YN | RESISTOR | 2.2Ω, 1/10W |
| | R402 | QRSA08J-2R2YN | RESISTOR | 2.2Ω, 1/10W |
| | R403 | QRSA08J-2R2YN | RESISTOR | 2.2Ω, 1/10W |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | R404 | QRSA08J-273YN | RESISTOR | 27KΩ, 1/10W |
| | R405 | QRSA08J-333YN | RESISTOR | 33KΩ, 1/10W |
| | R406 | QRSA08J-562YN | RESISTOR | 5.6KΩ, 1/10W |
| | R407 | QRSA08J-223YN | RESISTOR | 22KΩ, 1/10W |
| | R408 | QRSA08J-154YN | RESISTOR | 150KΩ, 1/10W |
| | R409 | QRSA08J-473YN | RESISTOR | 47KΩ, 1/10W |
| | R410 | QRSA08J-101YN | RESISTOR | 100Ω, 1/10W |
| | R411 | QRG12BJ-R68AR | RESISTOR | 0.68Ω, 1/2W |
| | R412 | QRSA08J-471YN | RESISTOR | 470Ω, 1/10W |
| | R413 | QRSA08J-431YN | RESISTOR | 430Ω, 1/10W |
| | R414 | QRSA08J-103YN | RESISTOR | 10KΩ, 1/10W |
| | R415 | QRSA08J-103YN | RESISTOR | 10KΩ, 1/10W |
| | R416 | QRSA08J-103YN | RESISTOR | 10KΩ, 1/10W |
| | R417 | QRSA08J-101YN | RESISTOR | 100Ω, 1/10W |
| | R418 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R419 | QRSA08J-202YN | RESISTOR | 2KΩ, 1/10W |
| | R420 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R421 | QRSA08J-472YN | RESISTOR | 4.7KΩ, 1/10W |
| | R422 | QRSA08J-472YN | RESISTOR | 4.7KΩ, 1/10W |
| | R423 | QRSA08J-472YN | RESISTOR | 4.7KΩ, 1/10W |
| | R424 | QRSA08J-153YN | RESISTOR | 15KΩ, 1/10W |
| | R425 | QRSA08J-912YN | RESISTOR | 9.1KΩ, 1/10W |
| | R501 | QRSA08J-221YN | RESISTOR | 220Ω, 1/10W |
| | R503 | QRSA08J-471YN | RESISTOR | 470Ω, 1/10W |
| | R504 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R505 | QRSA08J-474YN | RESISTOR | 470KΩ, 1/10W |
| | R506 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R507 | QRSA08J-474YN | RESISTOR | 470KΩ, 1/10W |
| | R508 | QRSA08J-472YN | RESISTOR | 4.7KΩ, 1/10W |
| | R509 | QRSA08J-105YN | RESISTOR | 1MΩ, 1/10W |
| | R510 | QRSA08J-473YN | RESISTOR | 47KΩ, 1/10W |
| | R511 | QRSA08J-103YN | RESISTOR | 10KΩ, 1/10W |
| | R513 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R514 | QRSA08J-562YN | RESISTOR | 5.6KΩ, 1/10W |
| | R515 | QRSA08J-392YN | RESISTOR | 3.9KΩ, 1/10W |
| | R516 | QRSA08J-472YN | RESISTOR | 4.7KΩ, 1/10W |
| | R517 | QRSA08J-683YN | RESISTOR | 68KΩ, 1/10W |
| | R518 | QRSA08J-101YN | RESISTOR | 100Ω, 1/10W |
| | R519 | QRSA08J-392YN | RESISTOR | 3.9KΩ, 1/10W |
| | R520 | QRSA08J-472YN | RESISTOR | 4.7KΩ, 1/10W |
| | R521 | QRSA08J-101YN | RESISTOR | 100Ω, 1/10W |
| | R522 | QRSA08J-683YN | RESISTOR | 68KΩ, 1/10W |
| | R523 | QRSA08J-562YN | RESISTOR | 5.6KΩ, 1/10W |
| | R524 | QRSA08J-102YN | RESISTOR | 1KΩ, 1/10W |
| | R526 | QRSA08J-471YN | RESISTOR | 470Ω, 1/10W |
| | C1 | QCFA1EZ-104 | CAPACITOR | 0.1µF, 25V |
| | C2 | QCFA1EZ-104 | CAPACITOR | 0.1µF, 25V |
| | C3 | QCFA1EZ-104 | CAPACITOR | 0.1µF, 25V |
| | C4 | QCFA1EZ-104 | CAPACITOR | 0.1µF, 25V |
| | C5 | QCFA1EZ-683 | CAPACITOR | 0.068µF, 25V |
| | C6 | QCFA1EZ-683 | CAPACITOR | 0.068µF, 25V |
| | C7 | QCSA1HJ-100 | CAPACITOR | 10PF, 50V |
| | C8 | QCSA1HJ-100 | CAPACITOR | 10PF, 50V |
| | C9 | QERF1HM-105 | E CAPACITOR | 1µF, 50V |
| | C10 | QCFA1EZ-104 | CAPACITOR | 0.1µF, 25V |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | C11 | QCFA1EZ-104 | CAPACITOR | 0.1µF, 25V |
| | C12 | QERF0JM-107 | E CAPACITOR | 100µF, 6.3V |
| | C13 | QFZ0095-473 | M CAPACITOR | 0.047µF |
| | C14 | QCFA1EZ-104 | CAPACITOR | 0.1µF, 25V |
| | C15 | QCFA1EZ-104 | CAPACITOR | 0.1µF, 25V |
| | C16 | QERF1HM-335 | E CAPACITOR | 3.3µF, 50V |
| | C17 | QCYA1HK-103 | CAPACITOR | 0.01µF, 50V |
| | C18 | QCYA1HK-102 | CAPACITOR | 0.001µF, 50V |
| | C19 | QCYA1HK-102 | CAPACITOR | 0.001µF, 50V |
| | C20 | QCYA1HK-102 | CAPACITOR | 0.001µF, 50V |
| | C21 | QENF1CM-475 | NP E CAPACITOR | 4.7µF, 16V |
| | C22 | QENF1VM-225 | NP E CAPACITOR | 2.2µF, 35V |
| | C23 | QCYA1HK-153 | CAPACITOR | 0.015µF, 50V |
| | C24 | QENF1CM-475 | NP E CAPACITOR | 4.7µF, 16V |
| | C25 | QCYA1HK-102 | CAPACITOR | 0.001µF, 50V |
| | C26 | QENF1HM-474 | NP E CAPACITOR | 0.47µF, 50V |
| | C27 | QCYA1HK-333 | CAPACITOR | 0.033µF, 50V |
| | C28 | QCFA1EZ-104 | CAPACITOR | 0.1µF, 25V |
| | C201 | QERF1CM-476 | E CAPACITOR | 47µF, 16V |
| | C202 | QERF0JM-107 | E CAPACITOR | 100µF, 6.3V |
| | C203 | QCFA1HZ-473 | CAPACITOR | 0.047µF, 50V |
| | C204 | QEDF1AM-826 | E CAPACITOR | 82µF, 10V |
| | C205 | QERF1HM-104 | E CAPACITOR | 0.1µF, 50V |
| | C206 | QEA40HZ-479 | GOLD CAP | 47000µF, 5.5V |
| | C207 | YU40265-5 | E CAPACITOR | |
| | C301 | QCYA1HK-223 | CAPACITOR | 0.022µF, 50V |
| | C302 | QCYA1HK-223 | CAPACITOR | 0.022µF, 50V |
| | C303 | QCYA1HK-223 | CAPACITOR | 0.022µF, 50V |
| | C304 | QERF1AM-336 | E CAPACITOR | 33µF, 10V |
| | C305 | QERF1AM-336 | E CAPACITOR | 33µF, 10V |
| | C306 | QERF1AM-336 | E CAPACITOR | 33µF, 10V |
| | C307 | QCYA1HK-103 | CAPACITOR | 0.01µF, 50V |
| | C308 | QCYA1HK-103 | CAPACITOR | 0.01µF, 50V |
| | C401 | QERF1CM-106 | E CAPACITOR | 10µF, 16V |
| | C402 | QERF1CM-106 | E CAPACITOR | 10µF, 16V |
| | C403 | QERF1CM-106 | E CAPACITOR | 10µF, 16V |
| | C404 | QCFA1HZ-104 | CAPACITOR | 0.1µF, 50V |
| | C405 | QCYA1HK-103 | CAPACITOR | 0.01µF, 50V |
| | C406 | QCYA1HK-471 | CAPACITOR | 470PF, 50V |
| | C407 | QFJ41HJ-473 | M CAPACITOR | 0.047µF, 50V |
| | C408 | QCFA1HZ-104 | CAPACITOR | 0.1µF, 50V |
| | C409 | QERF1CM-106 | E CAPACITOR | 10µF, 16V |
| | C410 | QCFA1HZ-473 | CAPACITOR | 0.047µF, 50V |
| | C411 | QCYA1HK-222 | CAPACITOR | 0.0022µF, 50V |
| | C412 | QCSA1HJ-471 | CAPACITOR | 470PF, 50V |
| | C413 | QCYA1HK-332 | CAPACITOR | 0.0033µF, 50V |
| | C414 | QCYA1HK-222 | CAPACITOR | 0.0022µF, 50V |
| | C415 | QCFA1HZ-104 | CAPACITOR | 0.1µF, 50V |
| | C416 | QERF1CM-106 | E CAPACITOR | 10µF, 16V |
| | C501 | QERF0JM-107 | E CAPACITOR | 100µF, 6.3V |
| | C502 | QCFA1EZ-104 | CAPACITOR | 0.1µF, 25V |
| | C503 | QCYA1HK-102 | CAPACITOR | 0.001µF, 50V |
| | C504 | QERF1CM-476 | E CAPACITOR | 47µF, 16V |
| | C505 | QERF1HM-105 | E CAPACITOR | 1µF, 50V |
| | C506 | QCSA1HJ-471 | CAPACITOR | 470PF, 50V |
| | C507 | QCFA1EZ-104 | CAPACITOR | 0.1µF, 25V |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|
| | C508 | QCSA1HJ-100 | CAPACITOR 10PF, 50V |
| | C509 | QCYA1HK-103 | CAPACITOR 0.01μF, 50V |
| | C510 | QERF1CM-106 | E CAPACITOR 10μF, 16V |
| | C511 | QCF81CZ-105 | CAPACITOR 1μF, 16V |
| | C512 | QCYA1HK-223 | CAPACITOR 0.022μF, 50V |
| | C513 | QCYA1HK-223 | CAPACITOR 0.022μF, 50V |
| | C514 | QERF1CM-106 | E CAPACITOR 10μF, 16V |
| | C515 | QER41CM-106 | E CAPACITOR 10μF, 16V |
| | C516 | QERF1CM-106 | E CAPACITOR 10μF, 16V |
| | C517 | QERF1CM-106 | E CAPACITOR 10μF, 16V |
| | C518 | QCYA1HK-102 | CAPACITOR 0.001μF, 50V |
| ⚠ | X1 | YU40962 | CRYSTAL RESONATOR |
| | SW1 | YU40177-2 | PUSH SWITCH |
| | SW2 | YU40177-2 | PUSH SWITCH |
| | SW3 | YU40177-2 | PUSH SWITCH |
| | SW4 | YU41145-1-1 | LEAF SWITCH |
| | SW5 | YU40963 | SLIDE SWITCH |
| | SW6 | YU40963 | SLIDE SWITCH |
| ⚠ | HD1 | PU51212 | FUSE CLIP, X2 |
| | SPC1 | PU59915-107 | SPACER |
| | TP203 | YU40581-AY | CHIP TP, REG 8V |
| | TP204 | YU40581-AY | CHIP TP, REG 5V |
| | TP411 | YU40581-AY | CHIP TP, DRUM FF |
| | TP501 | YU40581-AY | CHIP TP, VISS |
| | CN1 | YU40108-30 | CAP HOUSING |
| | CN2 | YU40677-30 | CAP HOUSING |
| | CN3 | YU40106-15 | CAP HOUSING |
| | CN4 | YU40101-26 | CAP HOUSING |
| | CN5 | YU40105-16 | CAP HOUSING, (BOARD TO BOARD) |
| | CN6 | YU40960-16 | CAP HOUSING |
| | CN7 | YU40101-10 | CAP HOUSING, (BOARD TO BOARD) |
| | CN8 | YU40096-7 | CAP HOUSING |
| | CN9 | YU40096-2B | CAP HOUSING |
| | CN10 | YU40096-2Y | CAP HOUSING |
| | CN11 | YU40096-2 | CAP HOUSING |
| | CN12 | YU40096-2R | CAP HOUSING |
| | CN13 | YU40096-3 | CAP HOUSING |
| | CN14 | YU40096-12 | CAP HOUSING |
| ⚠ | CP201 | ICP-F20 | CIRCUIT PROTECTOR |
| ⚠ | CP202 | ICP-F20 | CIRCUIT PROTECTOR |
| ⚠ | CP203 | ICP-F20 | CIRCUIT PROTECTOR |
| ⚠ | CP204 | ICP-F20 | CIRCUIT PROTECTOR |
| ⚠ | F1 | QMF51E2-3R15 | FUSE, (NOT INCL S/S BOARD ASSY) 3.15A, AC250V |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|

✱✱※✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱

## 8. Y/C BOARD ASSEMBLY ⟨02⟩

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|
| | PWBA | YB10041A-02-C2 | Y/C BOARD ASSY |
| | IC3 | MSM6989MS | IC |
| | IC5 | BX7699W | IC |
| | IC6 | NJM2246M | IC |
| | IC7 | NJM2235M | IC |
| | IC8 | NJM2244M | IC |
| | IC9 | NJM2244M | IC |
| | IC10 | NJM2245M | IC |
| | IC11 | CXL5003M | IC |
| | IC14 | AN8009 | IC |
| | IC15 | TA8733F | IC |
| | IC16 | M52074FP | IC |
| | IC17 | AN6392 | IC |
| | IC18 | VC2031MP | IC |
| | IC20 | NJM2233BM | IC |
| | IC401 | HA118090MA | IC |
| | IC402 | NJM2233BM | IC |
| | IC403 | HA118092FP | IC |
| | IC404 | AN3592S | IC |
| | Q5 | 2SC4081(QRS) | TRANSISTOR |
| | Q11 | 2SC4081(QRS) | TRANSISTOR |
| | Q12 | 2SC4081(QRS) | TRANSISTOR |
| | Q13 | 2SC4081(QRS) | TRANSISTOR |
| | Q14 | 2SC4081(QRS) | TRANSISTOR |
| | Q24 | 2SA1576(QRS) | TRANSISTOR |
| | Q25 | FMQ1 | TRANSISTOR |
| | Q27 | 2SA1576(QRS) | TRANSISTOR |
| | Q36 | 2SA1576(QRS) | TRANSISTOR |
| | Q37 | 2SA1576(QRS) | TRANSISTOR |
| | Q38 | 2SC4081(QRS) | TRANSISTOR |
| | Q39 | 2SA1576(QRS) | TRANSISTOR |
| | Q40 | 2SA1576(QRS) | TRANSISTOR |
| | Q41 | 2SC4081(QRS) | TRANSISTOR |
| | Q42 | DTA143EU | TRANSISTOR |
| | Q43 | 2SC4081(QRS) | TRANSISTOR |
| | Q44 | 2SC4081(QRS) | TRANSISTOR |
| | Q45 | 2SC4081(QRS) | TRANSISTOR |
| | Q46 | 2SA1576(QRS) | TRANSISTOR |
| | Q47 | 2SC4081(QRS) | TRANSISTOR |
| | Q57 | 2SA1036K | TRANSISTOR |
| | Q63 | 2SA1036K | TRANSISTOR |
| | Q65 | 2SC4081(QRS) | TRANSISTOR |
| | Q66 | 2SC4081(QRS) | TRANSISTOR |
| | Q67 | DTC144EU | TRANSISTOR |
| | Q68 | DTC144EU | TRANSISTOR |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|
| | Q69 | DTC144EU | TRANSISTOR |
| | Q70 | 2SA1036K | TRANSISTOR |
| | Q71 | 2SA1576(QRS) | TRANSISTOR |
| | Q72 | DTC144EU | TRANSISTOR |
| | Q73 | DTC144EU | TRANSISTOR |
| | Q74 | 2SA1576(QRS) | TRANSISTOR |
| | Q75 | DTC144WU | TRANSISTOR |
| | Q76 | DTC124EU | TRANSISTOR |
| | Q77 | 2SC4098(PQ) | TRANSISTOR |
| | Q78 | DTC144EU | TRANSISTOR |
| | Q79 | DTC144EU | TRANSISTOR |
| | Q80 | 2SA1576(QRS) | TRANSISTOR |
| | Q81 | DTC144EU | TRANSISTOR |
| | Q82 | DTC144EU | TRANSISTOR |
| | Q83 | DTC144EU | TRANSISTOR |
| | Q84 | 2SC4098(PQ) | TRANSISTOR |
| | Q85 | DTC144EU | TRANSISTOR |
| | Q86 | DTC144EU | TRANSISTOR |
| | Q87 | DTC144EU | TRANSISTOR |
| | Q91 | 2SA1576(QRS) | TRANSISTOR |
| | Q92 | DTC144EU | TRANSISTOR |
| | Q93 | DTC144EU | TRANSISTOR |
| | Q94 | DTC144EU | TRANSISTOR |
| | Q95 | DTC144EU | TRANSISTOR |
| | Q97 | DTC144EU | TRANSISTOR |
| | Q99 | 2SA1576(QRS) | TRANSISTOR |
| | Q100 | DTC144EU | TRANSISTOR |
| | Q101 | DTC144EU | TRANSISTOR |
| | Q102 | 2SA1576(QRS) | TRANSISTOR |
| | Q103 | 2SC4081(QRS) | TRANSISTOR |
| | Q104 | 2SC4081(QRS) | TRANSISTOR |
| | Q105 | 2SA1576(QRS) | TRANSISTOR |
| | Q106 | DTA124EU | TRANSISTOR |
| | Q107 | DTA124EU | TRANSISTOR |
| | Q108 | DTC144WU | TRANSISTOR |
| | Q109 | 2SC4081(QRS) | TRANSISTOR |
| | Q110 | 2SC4081(QRS) | TRANSISTOR |
| | Q111 | 2SC4081(QRS) | TRANSISTOR |
| | Q112 | DTC124EU | TRANSISTOR |
| | Q113 | 2SA1576(QRS) | TRANSISTOR |
| | Q114 | 2SC4081(QRS) | TRANSISTOR |
| | Q115 | 2SA1576(QRS) | TRANSISTOR |
| | Q116 | 2SC4081(QRS) | TRANSISTOR |
| | Q117 | DTC144EU | TRANSISTOR |
| | Q118 | 2SA1576(QRS) | TRANSISTOR |
| | Q119 | 2SC4081(QRS) | TRANSISTOR |
| | Q123 | DTC144EU | TRANSISTOR |
| | Q124 | DTA144EU | TRANSISTOR |
| | Q125 | DTC144EU | TRANSISTOR |
| | Q127 | 2SA1576(QRS) | TRANSISTOR |
| | Q128 | 2SB624-T1BBV4 | TRANSISTOR |
| | Q129 | DTC144EU | TRANSISTOR |
| | Q132 | DTC144EU | TRANSISTOR |
| | Q133 | DTC144EU | TRANSISTOR |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|
| | Q141 | DTC144EU | TRANSISTOR |
| | Q142 | DTC144EU | TRANSISTOR |
| | Q401 | 2SC4081(QRS) | TRANSISTOR |
| | Q402 | 2SC4098(PQ) | TRANSISTOR |
| | Q403 | 2SC4081(QRS) | TRANSISTOR |
| | Q404 | 2SA1576(QRS) | TRANSISTOR |
| | Q405 | DTC124EU | TRANSISTOR |
| | Q406 | DTC124EU | TRANSISTOR |
| | Q407 | DTC124EU | TRANSISTOR |
| | Q408 | DTA144EU | TRANSISTOR |
| | Q409 | DTC144WU | TRANSISTOR |
| | Q410 | DTC114EU | TRANSISTOR |
| | Q411 | DTC114EU | TRANSISTOR |
| | Q412 | DTC144WU | TRANSISTOR |
| | Q413 | DTC144EU | TRANSISTOR |
| | Q414 | DTC144EU | TRANSISTOR |
| | Q415 | 2SC4081(QRS) | TRANSISTOR |
| | Q416 | 2SC4081(QRS) | TRANSISTOR |
| | Q417 | 2SC4081(QRS) | TRANSISTOR |
| | Q418 | 2SA1576(QRS) | TRANSISTOR |
| | Q419 | 2SA1576(QRS) | TRANSISTOR |
| | Q421 | 2SC4081(QRS) | TRANSISTOR |
| | Q422 | 2SC4081(QRS) | TRANSISTOR |
| | Q423 | 2SC4081(QRS) | TRANSISTOR |
| | Q424 | 2SA1576(QRS) | TRANSISTOR |
| | Q425 | 2SC4081(QRS) | TRANSISTOR |
| | Q426 | 2SA1576(QRS) | TRANSISTOR |
| | Q429 | 2SC4081(QRS) | TRANSISTOR |
| | Q430 | DTC144EU | TRANSISTOR |
| | Q431 | 2SC4081(QRS) | TRANSISTOR |
| | Q432 | DTC144EU | TRANSISTOR |
| | D14 | DAN202U | DIODE |
| | D19 | DAN202U | DIODE |
| | D20 | DAN202U | DIODE |
| | D21 | DAN202U | DIODE |
| | D22 | DAN202U | DIODE |
| | D23 | DAN202U | DIODE |
| | D25 | DAP202U | DIODE |
| | D26 | DAN202U | DIODE |
| | D27 | DAN202U | DIODE |
| | D28 | DAN202U | DIODE |
| | D29 | DAN202U | DIODE |
| | D30 | DAN202U | DIODE |
| | D32 | DAN202U | DIODE |
| | D33 | DAP202U | DIODE |
| | D35 | DAN202U | DIODE |
| | D36 | DAN202U | DIODE |
| | D37 | DAN202U | DIODE |
| | D38 | DAN202U | DIODE |
| | D39 | DAN202U | DIODE |
| | D401 | DAN202U | DIODE |
| | D402 | DAN202U | DIODE |
| | D403 | DAN202U | DIODE |
| | D404 | DAN202U | DIODE |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | D405 | DAN202U | DIODE | |
| | D406 | DAN202U | DIODE | |
| | D407 | DAN202U | DIODE | |
| | D408 | DAN202U | DIODE | |
| | D409 | DAN202U | DIODE | |
| | D410 | DAN202U | DIODE | |
| | D411 | DAN202U | DIODE | |
| | D413 | DAN202U | DIODE | |
| | R13 | NRSA63J-122N | RESISTOR | 1.2KΩ, 1/16W |
| | R14 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R15 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R16 | PU57567-22 | TM R, 0.5H DELAYED SIG LEVEL | |
| | R35 | NRSA63J-392N | RESISTOR | 3.9KΩ, 1/16W |
| | R36 | NRSA63J-221N | RESISTOR | 220Ω, 1/16W |
| | R37 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R38 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R39 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R40 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R41 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R42 | NRSA63J-472N | RESISTOR | 4.7KΩ, 1/16W |
| | R43 | NRSA63J-821N | RESISTOR | 820Ω, 1/16W |
| | R44 | NRSA63J-472N | RESISTOR | 4.7KΩ, 1/16W |
| | R62 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R63 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R64 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R65 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R68 | NRSA63J-152N | RESISTOR | 1.5KΩ, 1/16W |
| | R70 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R72 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R81 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R85 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R86 | QRD161J-750 | RESISTOR | 75Ω, 1/6W |
| | R88 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R89 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R90 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R91 | QRD161J-750 | RESISTOR | 75Ω, 1/6W |
| | R92 | QRD161J-821 | RESISTOR | 820Ω, 1/6W |
| | R93 | QRD161J-821 | RESISTOR | 820Ω, 1/6W |
| | R94 | NRSA63J-562N | RESISTOR | 5.6KΩ, 1/16W |
| | R95 | NRSA63J-562N | RESISTOR | 5.6KΩ, 1/16W |
| | R96 | QRD161J-821 | RESISTOR | 820Ω, 1/6W |
| | R97 | QRD161J-821 | RESISTOR | 820Ω, 1/6W |
| | R98 | QRD161J-750 | RESISTOR | 75Ω, 1/6W |
| | R99 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R100 | NRSA63J-182N | RESISTOR | 1.8KΩ, 1/16W |
| | R101 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R102 | NRSA63J-681N | RESISTOR | 680Ω, 1/16W |
| | R103 | NRSA63J-392N | RESISTOR | 3.9KΩ, 1/16W |
| | R104 | PU57567-24 | TM RESISTOR, CCD BIAS | |
| | R105 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R106 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R107 | NRSA63J-122N | RESISTOR | 1.2KΩ, 1/16W |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | R109 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R110 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R111 | NRSA63J-105N | RESISTOR | 1MΩ, 1/16W |
| | R112 | QRSA08J-475YN | RESISTOR | 4.7MΩ, 1/10W |
| | R113 | NRSA63J-152N | RESISTOR | 1.5KΩ, 1/16W |
| | R142 | NRSA63J-393N | RESISTOR | 39KΩ, 1/16W |
| | R143 | NRSA63J-272N | RESISTOR | 2.7KΩ, 1/16W |
| | R149 | NRSA63J-472N | RESISTOR | 4.7KΩ, 1/16W |
| | R150 | NRSA63J-122N | RESISTOR | 1.2KΩ, 1/16W |
| | R151 | NRSA63J-122N | RESISTOR | 1.2KΩ, 1/16W |
| | R152 | NRSA63J-221N | RESISTOR | 220Ω, 1/16W |
| | R153 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R154 | NRSA63J-221N | RESISTOR | 220Ω, 1/16W |
| | R155 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R163 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R164 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R165 | NRSA63J-153N | RESISTOR | 15KΩ, 1/16W |
| | R166 | NRSA63J-823N | RESISTOR | 82KΩ, 1/16W |
| | R167 | NRSA63J-821N | RESISTOR | 820Ω, 1/16W |
| | R168 | NVP1301-102N | V RESISTOR, C REC FM LEVEL | 1KΩ |
| | R169 | NRSA63J-681N | RESISTOR | 680Ω, 1/16W |
| | R170 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R171 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R172 | NRSA63J-681N | RESISTOR | 680Ω, 1/16W |
| | R173 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R174 | NRSA63J-182N | RESISTOR | 1.8KΩ, 1/16W |
| | R175 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R176 | NRSA63J-153N | RESISTOR | 15KΩ, 1/16W |
| | R177 | NRSA63J-331N | RESISTOR | 330Ω, 1/16W |
| | R178 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R179 | NVP1301-102N | V RESISTOR, S REC FM LEVEL | 1KΩ |
| | R180 | NRSA63J-393N | RESISTOR | 39KΩ, 1/16W |
| | R181 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R182 | NRSA63J-391N | RESISTOR | 390Ω, 1/16W |
| | R183 | NRSA63J-393N | RESISTOR | 39KΩ, 1/16W |
| | R184 | NRSA63J-471N | RESISTOR | 470Ω, 1/16W |
| | R185 | NRSA63J-393N | RESISTOR | 39KΩ, 1/16W |
| | R186 | NRSA63J-271N | RESISTOR | 270Ω, 1/16W |
| | R187 | NRSA63J-623N | RESISTOR | 62KΩ, 1/16W |
| | R188 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R189 | NRSA63J-101N | RESISTOR | 100Ω, 1/16W |
| | R190 | NRSA63J-820N | RESISTOR | 82Ω, 1/16W |
| | R191 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R193 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R194 | NRSA63J-472N | RESISTOR | 4.7KΩ, 1/16W |
| | R195 | NRSA63J-392N | RESISTOR | 3.9KΩ, 1/16W |
| | R196 | NRSA63J-562N | RESISTOR | 5.6KΩ, 1/16W |
| | R197 | NRSA63J-681N | RESISTOR | 680Ω, 1/16W |
| | R198 | NRSA63J-272N | RESISTOR | 2.7KΩ, 1/16W |
| | R199 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R200 | PU57567-33 | TM RESISTOR, C PB Y LEVEL | |
| | R201 | PU57567-26 | TM RESISTOR, S PB Y LEVEL | |
| | R202 | NRSA63J-102N | RESISTOR | 1 KΩ, 1/16W |
| | R203 | NRSA63J-103N | RESISTOR | 10 KΩ, 1/16W |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | R204 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R205 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R206 | NRSA63J-123N | RESISTOR | 12KΩ, 1/16W |
| | R207 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R208 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R209 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R210 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R211 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R212 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R213 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R214 | NRSA63J-562N | RESISTOR | 5.6KΩ, 1/16W |
| | R215 | NRSA63J-122N | RESISTOR | 1.2KΩ, 1/16W |
| | R216 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R219 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R220 | NRSA63J-121N | RESISTOR | 120Ω, 1/16W |
| | R221 | NRSA63J-101N | RESISTOR | 100Ω, 1/16W |
| | R222 | PU57567-7 | TM RESISTOR, C CARRIER | |
| | R223 | PU57567-13 | TM RESISTOR, S CARRIER | |
| | R224 | PU57567-31 | TM RESISTOR, C DEVIATION | |
| | R225 | PU57567-33 | TM RESISTOR, S DEVIATION | |
| | R226 | NRSA63J-272N | RESISTOR | 2.7KΩ, 1/16W |
| | R227 | NRSA63J-681N | RESISTOR | 680Ω, 1/16W |
| | R231 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R232 | NRSA63J-471N | RESISTOR | 470Ω, 1/16W |
| | R233 | NRSA63J-471N | RESISTOR | 470Ω, 1/16W |
| | R234 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R235 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R236 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R237 | PU57567-25 | TM RESISTOR, EE Y LEVEL | |
| | R238 | NRSA63J-471N | RESISTOR | 470Ω, 1/16W |
| | R239 | NRSA63J-153N | RESISTOR | 15KΩ, 1/16W |
| | R242 | NRSA63J-561N | RESISTOR | 560Ω, 1/16W |
| | R243 | NRSA63J-391N | RESISTOR | 390Ω, 1/16W |
| | R244 | PU57567-18 | TM RESISTOR, S WHITE CLIP | |
| | R245 | PU57567-25 | TM RESISTOR, C WHITE CLIP | |
| | R246 | NRSA63J-272N | RESISTOR | 2.7KΩ, 1/16W |
| | R247 | PU57567-35 | TM RESISTOR, C DARK CLIP | |
| | R248 | PU57567-1 | TM RESISTOR, S DARK CLIP | |
| | R249 | NRSA63J-562N | RESISTOR | 5.6KΩ, 1/16W |
| | R250 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R251 | NRSA63J-821N | RESISTOR | 820Ω, 1/16W |
| | R252 | NRSA63J-151N | RESISTOR | 150Ω, 1/16W |
| | R253 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R254 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R256 | NRSA63J-561N | RESISTOR | 560Ω, 1/16W |
| | R257 | NRSA63J-152N | RESISTOR | 1.5KΩ, 1/16W |
| | R258 | NRSA63J-472N | RESISTOR | 4.7KΩ, 1/16W |
| | R259 | NRSA63J-152N | RESISTOR | 1.5KΩ, 1/16W |
| | R260 | NRSA63J-561N | RESISTOR | 560Ω, 1/16W |
| | R261 | NRSA63J-561N | RESISTOR | 560Ω, 1/16W |
| | R262 | NVP1301-152N | V RESISTOR, S SP PB RF EQ | 1.5KΩ |
| | R263 | NVP1301-222N | V RESISTOR, S LP PB RF EQ | 2.2KΩ |
| | R264 | NRSA63J-471N | RESISTOR | 470Ω, 1/16W |
| | R265 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R266 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R267 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R268 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R269 | NRSA63J-273N | RESISTOR | 27KΩ, 1/16W |
| | R270 | NRSA63J-471N | RESISTOR | 470Ω, 1/16W |
| | R271 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R272 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R273 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R274 | NVP1301-332N | V RESISTOR, C LP PB RF EQ | 3.3KΩ |
| | R275 | NRSA63J-561N | RESISTOR | 560Ω, 1/16W |
| | R276 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R277 | NRSA63J-101N | RESISTOR | 100Ω, 1/16W |
| | R278 | NVP1301-332N | V RESISTOR, C SP PB RF EQ | 3.3KΩ |
| | R279 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R280 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R281 | NRSA63J-751N | RESISTOR | 750Ω, 1/16W |
| | R282 | NRSA63J-561N | RESISTOR | 560Ω, 1/16W |
| | R283 | NRSA63J-821N | RESISTOR | 820Ω, 1/16W |
| | R284 | NRSA63J-152N | RESISTOR | 1.5KΩ, 1/16W |
| | R285 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R286 | NRSA63J-271N | RESISTOR | 270Ω, 1/16W |
| | R287 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R288 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R289 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R290 | NRSA63J-152N | RESISTOR | 1.5KΩ, 1/16W |
| | R291 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R292 | NRSA63J-391N | RESISTOR | 390Ω, 1/16W |
| | R293 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R294 | NRSA63J-272N | RESISTOR | 2.7KΩ, 1/16W |
| | R295 | NRSA63J-823N | RESISTOR | 82KΩ, 1/16W |
| | R296 | NRSA63G-102N | RESISTOR | 1KΩ, 1/16W |
| | R297 | PU57567-19 | TM R, S NL EMPHA LIM SUB BAL | |
| | R298 | PU57567-27 | TM R, S NL EMPHA LIM BAL | |
| | R299 | NRSA63G-102N | RESISTOR | 1KΩ, 1/16W |
| | R300 | NRSA63J-471N | RESISTOR | 470Ω, 1/16W |
| | R301 | NRSA63G-152N | RESISTOR | 1.5KΩ, 1/16W |
| | R302 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R303 | NRSA63G-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R304 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R305 | NRSA63G-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R306 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R307 | QRSA08J-0R0Y | RESISTOR | 0Ω, 1/10W |
| | R308 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R309 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R310 | NRSA63J-391N | RESISTOR | 390Ω, 1/16W |
| | R311 | NRSA63J-242N | RESISTOR | 2.4KΩ, 1/16W |
| | R312 | NRSA63J-391N | RESISTOR | 390Ω, 1/16W |
| | R313 | PU57567-18 | TM R, S NL EMPHA INPUT LEVEL | |
| | R314 | NRSA63J-221N | RESISTOR | 220Ω, 1/16W |
| | R316 | PU57567-18 | TM R, S NL EMPHA OUTPUT LEVEL | |
| | R317 | NVP1301-102N | V RESISTOR, EE BURST LEVEL | 1KΩ |
| | R318 | NRSA63J-681N | RESISTOR | 680Ω, 1/16W |
| | R319 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R320 | NRSA63J-181N | RESISTOR | 180Ω, 1/16W |
| | R321 | NRSA63J-821N | RESISTOR | 820Ω, 1/16W |
| | R325 | QRD161J-750 | RESISTOR | 75Ω, 1/6W |
| | R326 | NRSA63J-152N | RESISTOR | 1.5KΩ, 1/16W |
| | R327 | NRSA63J-155N | RESISTOR | 1.5MΩ, 1/16W |
| | R328 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | R330 | NRSA63J-0R0N | RESISTOR | 0Ω, 1/16W |
| | R331 | QRD161J-561 | RESISTOR | 560Ω, 1/6W |
| | R332 | NRSA63J-561N | RESISTOR | 560Ω, 1/16W |
| | R333 | NRSA63J-334N | RESISTOR | 330KΩ, 1/16W |
| | R336 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R337 | NRSA63J-272N | RESISTOR | 2.7KΩ, 1/16W |
| | R338 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R339 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R340 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R341 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R342 | NRSA63J-152N | RESISTOR | 1.5KΩ, 1/16W |
| | R343 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R346 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R347 | QRD161J-102 | RESISTOR | 1KΩ, 1/6W |
| | R348 | QRD161J-123 | RESISTOR | 12KΩ, 1/6W |
| | R349 | NRSA63J-101N | RESISTOR | 100Ω, 1/16W |
| | R350 | NRSA63J-101N | RESISTOR | 100Ω, 1/16W |
| | R352 | NRSA63J-823N | RESISTOR | 82KΩ, 1/16W |
| | R353 | NRSA63J-564N | RESISTOR | 560KΩ, 1/16W |
| | R354 | NRSA63J-564N | RESISTOR | 560KΩ, 1/16W |
| | R369 | NRSA63J-472N | RESISTOR | 4.7KΩ, 1/16W |
| | R401 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R402 | NRSA63J-152N | RESISTOR | 1.5KΩ, 1/16W |
| | R403 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R404 | NRSA63J-331N | RESISTOR | 330Ω, 1/16W |
| | R405 | NRSA63J-221N | RESISTOR | 220Ω, 1/16W |
| | R406 | NRSA63J-331N | RESISTOR | 330Ω, 1/16W |
| | R407 | NRSA63J-471N | RESISTOR | 470Ω, 1/16W |
| | R408 | NRSA63J-393N | RESISTOR | 39KΩ, 1/16W |
| | R409 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R410 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R411 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R412 | NRSA63J-821N | RESISTOR | 820Ω, 1/16W |
| | R413 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R414 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R415 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R416 | NRSA63J-104N | RESISTOR | 100KΩ, 1/16W |
| | R417 | NRSA63J-151N | RESISTOR | 150Ω, 1/16W |
| | R418 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R419 | NRSA63J-391N | RESISTOR | 390Ω, 1/16W |
| | R420 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R421 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R422 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R423 | NRSA63J-225N | RESISTOR | 2.2MΩ, 1/16W |
| | R424 | NRSA63J-821N | RESISTOR | 820Ω, 1/16W |
| | R425 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R426 | NRSA63J-391N | RESISTOR | 390Ω, 1/16W |
| | R427 | NRSA63J-471N | RESISTOR | 470Ω, 1/16W |
| | R428 | NRSA63J-183N | RESISTOR | 18KΩ, 1/16W |
| | R429 | NRSA63J-183N | RESISTOR | 18KΩ, 1/16W |
| | R430 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R431 | NRSA63J-472N | RESISTOR | 4.7KΩ, 1/16W |
| | R432 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R433 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | R434 | NRSA63J-0R0N | RESISTOR | 0Ω, 1/16W |
| | R435 | NVP1301-222N | V RESISTOR, S LP REC COLOR LEVEL | 2.2KΩ |
| | R436 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R437 | NVP1301-222N | V RESISTOR, S SP REC COLOR LEVEL | 2.2KΩ |
| | R438 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R439 | PU57567-25 | TM RESISTOR, PILOT BURST LEVEL | |
| | R440 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R441 | NRSA63J-181N | RESISTOR | 180Ω, 1/16W |
| | R442 | NRSA63J-823N | RESISTOR | 82KΩ, 1/16W |
| | R443 | NRSA63J-152N | RESISTOR | 1.5KΩ, 1/16W |
| | R444 | NRSA63J-751N | RESISTOR | 750Ω, 1/16W |
| | R446 | NRSA63J-273N | RESISTOR | 27KΩ, 1/16W |
| | R447 | NRSA63J-561N | RESISTOR | 560Ω, 1/16W |
| | R448 | NRSA63J-471N | RESISTOR | 470Ω, 1/16W |
| | R449 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R450 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R451 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R452 | NRSA63J-561N | RESISTOR | 560Ω, 1/16W |
| | R453 | NRSA63J-471N | RESISTOR | 470Ω, 1/16W |
| | R455 | NRSA63J-561N | RESISTOR | 560Ω, 1/16W |
| | R457 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R458 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R459 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R460 | PU57567-27 | TM RESISTOR, 2Fh VCO | |
| | R461 | NRSA63J-273N | RESISTOR | 27KΩ, 1/16W |
| | R462 | NRSA63J-393N | RESISTOR | 39KΩ, 1/16W |
| | R463 | NRSA63J-154N | RESISTOR | 150KΩ, 1/16W |
| | R464 | NRSA63J-221N | RESISTOR | 220Ω, 1/16W |
| | R465 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R466 | NRSA63J-391N | RESISTOR | 390Ω, 1/16W |
| | R467 | NRSA63J-101N | RESISTOR | 100Ω, 1/16W |
| | R468 | NRSA63J-391N | RESISTOR | 390Ω, 1/16W |
| | R469 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R470 | NRSA63J-123N | RESISTOR | 12KΩ, 1/16W |
| | R471 | NRSA63J-104N | RESISTOR | 100KΩ, 1/16W |
| | R472 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R473 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R474 | NRSA63J-122N | RESISTOR | 1.2KΩ, 1/16W |
| | R475 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R476 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R477 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R478 | NRSA63J-331N | RESISTOR | 330Ω, 1/16W |
| | R479 | NVP1301-472N | V RESISTOR, INVERTED COLOR LEVEL | 4.7KΩ |
| | R480 | NRSA63J-561N | RESISTOR | 560Ω, 1/16W |
| | R481 | NRSA63J-561N | RESISTOR | 560Ω, 1/16W |
| | R482 | NRSA63J-821N | RESISTOR | 820Ω, 1/16W |
| | R483 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R484 | NRSA63J-101N | RESISTOR | 100Ω, 1/16W |
| | R485 | NRSA63J-391N | RESISTOR | 390Ω, 1/16W |
| | R486 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R487 | NRSA63J-561N | RESISTOR | 560Ω, 1/16W |
| | R488 | NRSA63J-393N | RESISTOR | 39KΩ, 1/16W |
| | R489 | NRSA63J-561N | RESISTOR | 560Ω, 1/16W |
| | R490 | NRSA63J-221N | RESISTOR | 220Ω, 1/16W |
| | R491 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R492 | NRSA63J-561N | RESISTOR | 560Ω, 1/16W |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | R493 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R494 | NRSA63J-561N | RESISTOR | 560Ω, 1/16W |
| | R495 | NRSA63J-393N | RESISTOR | 39KΩ, 1/16W |
| | R496 | NRSA63J-272N | RESISTOR | 2.7KΩ, 1/16W |
| | R497 | NRSA63J-391N | RESISTOR | 390Ω, 1/16W |
| | R498 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R499 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R500 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R501 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | B1 | NRSA63J-0R0A | RESISTOR | |
| | B3 | NRSA63J-0R0A | RESISTOR | |
| | B4 | NRSA63J-0R0A | RESISTOR | |
| | B5 | NRSA63J-0R0A | RESISTOR | |
| | J1 | QRSA08J-0R0Y | RESISTOR | |
| | J2 | QRSA08J-0R0Y | RESISTOR | |
| | J3 | NRSA63J-0R0A | RESISTOR | |
| | J5 | NRSA63J-0R0A | RESISTOR | |
| | J6 | NRSA63J-0R0A | RESISTOR | |
| | J8 | NRSA63J-0R0A | RESISTOR | |
| | C16 | QEPF1CM-106 | NP E CAPACITOR | 10μF, 16V |
| | C17 | NCS31HJ-270A | CAPACITOR | 27PF, 50V |
| | C18 | NCS31HJ-330A | CAPACITOR | 33PF, 50V |
| | C19 | QERF1HM-334 | E CAPACITOR | 0.33μF, 50V |
| | C20 | QERF1EM-475 | E CAPACITOR | 4.7μF, 25V |
| | C21 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C22 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C23 | QERF0JM-476 | E CAPACITOR | 47μF, 6.3V |
| | C24 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C25 | QERF1AM-476 | E CAPACITOR | 47μF, 10V |
| | C26 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C44 | QERF1EM-475 | E CAPACITOR | 4.7μF, 25V |
| | C45 | NCS31HJ-120A | CAPACITOR | 12PF, 50V |
| | C46 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C47 | QERF1AM-476 | E CAPACITOR | 47μF, 10V |
| | C48 | NCS31HJ-180A | CAPACITOR | 18PF, 50V |
| | C49 | QERF1CM-106 | E CAPACITOR | 10μF, 16V |
| | C50 | QERF1CM-106 | E CAPACITOR | 10μF, 16V |
| | C51 | NCS31HJ-220A | CAPACITOR | 22PF, 50V |
| | C52 | QERF1AM-476 | E CAPACITOR | 47μF, 10V |
| | C53 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C57 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C58 | QERF1AM-476 | E CAPACITOR | 47μF, 10V |
| | C59 | QERF1EM-475 | E CAPACITOR | 4.7μF, 25V |
| | C61 | QEKA0HM-477 | E CAPACITOR | 470μF, 5.5V |
| | C62 | QERF1EM-475 | E CAPACITOR | 4.7μF, 25V |
| | C63 | QEKA0HM-477 | E CAPACITOR | 470μF, 5.5V |
| | C64 | QERF1EM-475 | E CAPACITOR | 4.7μF, 25V |
| | C65 | QERF1EM-475 | E CAPACITOR | 4.7μF, 25V |
| | C66 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C67 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C68 | QERF1AM-476 | E CAPACITOR | 47μF, 10V |
| | C70 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | C71 | QCFA1EZ-104 | CAPACITOR | 0.1μF, 25V |
| | C72 | QERF1AM-476 | E CAPACITOR | 47μF, 10V |
| | C73 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C74 | QCFA1EZ-104 | CAPACITOR | 0.1μF, 25V |
| | C75 | QERF1CM-106 | E CAPACITOR | 10μF, 16V |
| | C76 | QEPF0JM-476 | E CAPACITOR | 47μF, 6.3V |
| | C78 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C79 | QERF0JM-476 | E CAPACITOR | 47μF, 6.3V |
| | C80 | QEPF1HM-104 | E CAPACITOR | 0.1μF, 50V |
| | C81 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C82 | QERF1HM-474 | E CAPACITOR | 0.47μF, 50V |
| | C83 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C84 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C85 | QERF1CM-336 | E CAPACITOR | 33μF, 16V |
| | C101 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | C102 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C103 | QERF0JM-476 | E CAPACITOR | 47μF, 6.3V |
| | C104 | QER41AM-336 | E CAPACITOR | 33μF, 10V |
| | C105 | QERF1HM-334 | E CAPACITOR | 0.33μF, 50V |
| | C106 | QERF1CM-106 | E CAPACITOR | 10μF, 16V |
| | C107 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C108 | NCS31HJ-121A | CAPACITOR | 120PF, 50V |
| | C109 | NCB31HK-331A | CAPACITOR | 330PF, 50V |
| | C110 | NCS31HJ-121A | CAPACITOR | 120PF, 50V |
| | C111 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C112 | NCS31HJ-560A | CAPACITOR | 56PF, 50V |
| | C113 | NCB31HK-271A | CAPACITOR | 270PF, 50V |
| | C114 | NCS31HJ-151A | CAPACITOR | 150PF, 50V |
| | C115 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C120 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C121 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C122 | QERF0JM-476 | E CAPACITOR | 47μF, 6.3V |
| | C123 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C124 | QERF1HM-104 | E CAPACITOR | 0.1μF, 50V |
| | C125 | NCS31HJ-121A | CAPACITOR | 120PF, 50V |
| | C126 | NCS31HJ-121A | CAPACITOR | 120PF, 50V |
| | C127 | NCS31HJ-150A | CAPACITOR | 15PF, 50V |
| | C128 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C129 | QERF0JM-476 | E CAPACITOR | 47μF, 6.3V |
| | C130 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C131 | NCS31HJ-7R0A | CAPACITOR | 7PF, 50V |
| | C132 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C133 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C134 | NCS31HJ-180A | CAPACITOR | 18PF, 50V |
| | C135 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C136 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C137 | QERF1CM-476 | E CAPACITOR | 47μF, 16V |
| | C138 | QCYA1EK-223 | CAPACITOR | 0.022μF, 25V |
| | C139 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C140 | QERF1HM-105 | E CAPACITOR | 1μF, 50V |
| | C141 | NCS31HJ-470A | CAPACITOR | 47PF, 50V |
| | C142 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C143 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C144 | QERF0JM-107 | E CAPACITOR | 100μF, 6.3V |
| | C145 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C147 | NCB31HK-331A | CAPACITOR | 330PF, 50V |
| | C148 | NCS31HJ-470A | CAPACITOR | 47PF, 50V |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | C149 | NCS31HJ-820A | CAPACITOR | 82PF, 50V |
| | C150 | NCB31HK-181A | CAPACITOR | 180PF, 50V |
| | C151 | NCS31HJ-101A | CAPACITOR | 100PF, 50V |
| | C152 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C153 | NCS31HJ-390A | CAPACITOR | 39PF, 50V |
| | C154 | NRSA63J-0R0N | RESISTOR | 0Ω, 1/16W |
| | C155 | NCS31HJ-100A | CAPACITOR | 10PF, 50V |
| | C156 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C157 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C158 | QERF1HM-224 | E CAPACITOR | 0.22μF, 50V |
| | C159 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C160 | NCS31HJ-271A | CAPACITOR | 270PF, 50V |
| | C161 | NCS31HJ-330A | CAPACITOR | 33PF, 50V |
| | C162 | NCS31HJ-121A | CAPACITOR | 120PF, 50V |
| | C163 | QERF0JM-107 | E CAPACITOR | 100μF, 6.3V |
| | C164 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C165 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C166 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C167 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C168 | NCS31HJ-470A | CAPACITOR | 47PF, 50V |
| | C171 | QEF80JM-225 | E CAPACITOR | 2.2μF, 6.3V |
| | C172 | QEF80JM-225 | E CAPACITOR | 2.2μF, 6.3V |
| | C173 | QEF80JM-225 | E CAPACITOR | 2.2μF, 6.3V |
| | C174 | QEPF1CM-106 | E CAPACITOR | 10μF, 16V |
| | C175 | QERF1EM-475 | E CAPACITOR | 4.7μF, 25V |
| | C176 | QEF81VM-474 | TANTAL CAPACITOR | 0.47μF, 35V |
| | C177 | QERF1EM-475 | E CAPACITOR | 4.7μF, 25V |
| | C178 | QERF1HM-474 | E CAPACITOR | 0.47μF, 50V |
| | C180 | QERF1HM-474 | E CAPACITOR | 0.47μF, 50V |
| | C181 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C182 | NCS31HJ-820A | CAPACITOR | 82PF, 50V |
| | C183 | QERF1CM-106 | E CAPACITOR | 10μF, 16V |
| | C184 | QERF1EM-475 | E CAPACITOR | 4.7μF, 25V |
| | C185 | QERF0JM-476 | E CAPACITOR | 47μF, 6.3V |
| | C186 | NCS31HJ-120A | CAPACITOR | 12PF, 50V |
| | C188 | NCS31HJ-390A | CAPACITOR | 39PF, 50V |
| | C189 | NCS31HJ-180A | CAPACITOR | 18PF, 50V |
| | C190 | NCS31HJ-390A | CAPACITOR | 39PF, 50V |
| | C191 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C192 | NCS31HJ-390A | CAPACITOR | 39PF, 50V |
| | C193 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C194 | QERF0JM-476 | E CAPACITOR | 47μF, 6.3V |
| | C195 | NCS31HJ-680A | CAPACITOR | 68PF, 50V |
| | C196 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C197 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C198 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C199 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C200 | NCS31HJ-470A | CAPACITOR | 47PF, 50V |
| | C201 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C202 | QCFA1EZ-104 | CAPACITOR | 0.1μF, 25V |
| | C203 | NCS31HJ-120A | CAPACITOR | 12PF, 50V |
| | C204 | NCS31HJ-120A | CAPACITOR | 12PF, 50V |
| | C205 | NCS31HJ-270A | CAPACITOR | 27PF, 50V |
| | C206 | NCS31HJ-150A | CAPACITOR | 15PF, 50V |
| | C207 | NCS31HJ-560A | CAPACITOR | 56PF, 50V |
| | C209 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C210 | NCS31HJ-151A | CAPACITOR | 150PF, 50V |
| | C211 | NCS31HJ-820A | CAPACITOR | 82PF, 50V |
| | C212 | NCB31HK-271A | CAPACITOR | 270PF, 50V |
| | C213 | NCB31HK-271A | CAPACITOR | 270PF, 50V |
| | C214 | QER41EM-335 | E CAPACITOR | 3.3μF, 25V |
| | C215 | NCS31HJ-390A | CAPACITOR | 39PF, 50V |
| | C216 | QERF1EM-475 | E CAPACITOR | 4.7μF, 25V |
| | C217 | QERF1EM-475 | E CAPACITOR | 4.7μF, 25V |
| | C218 | QERF1EM-475 | E CAPACITOR | 4.7μF, 25V |
| | C219 | QERF1EM-106 | E CAPACITOR | 10μF, 25V |
| | C220 | YU40173-271Z | CAPACITOR | |
| | C221 | YU40173-820Z | CAPACITOR | |
| | C222 | YU40173-221Z | CAPACITOR | |
| | C223 | YU40173-271Z | CAPACITOR | |
| | C224 | YU40173-271Z | CAPACITOR | |
| | C225 | QERF0JM-476 | E CAPACITOR | 47μF, 6.3V |
| | C226 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C227 | NCS31HJ-271A | CAPACITOR | 270PF, 50V |
| | C232 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C233 | QERF0JM-476 | E CAPACITOR | 47μF, 6.3V |
| | C234 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C235 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C236 | QERF1CM-106 | E CAPACITOR | 10μF, 16V |
| | C237 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C238 | QERF1EM-335 | E CAPACITOR | 3.3μF, 25V |
| | C239 | NCS31HJ-121A | CAPACITOR | 120PF, 50V |
| | C240 | NCS31HJ-390A | CAPACITOR | 39PF, 50V |
| | C241 | NCS31HJ-181A | CAPACITOR | 180PF, 50V |
| | C242 | YU40265-3 | E CAPACITOR | |
| | C244 | QFV41HJ-104 | M CAPACITOR | 0.1μF, 50V |
| | C401 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C402 | NCS31HJ-221A | CAPACITOR | 220PF, 50V |
| | C403 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C404 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C405 | QCFA1EZ-683 | CAPACITOR | 0.068μF, 25V |
| | C406 | QERF0JM-107 | E CAPACITOR | 100μF, 6.3V |
| | C407 | QERF1EM-335 | E CAPACITOR | 3.3μF, 25V |
| | C408 | QCFA1EZ-104 | CAPACITOR | 0.1μF, 25V |
| | C409 | QCFA1EZ-104 | CAPACITOR | 0.1μF, 25V |
| | C410 | NCS31HJ-470A | CAPACITOR | 47PF, 50V |
| | C411 | NCS31HJ-100A | CAPACITOR | 10PF, 50V |
| | C412 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C413 | QERF0JM-107 | E CAPACITOR | 100μF, 6.3V |
| | C414 | QCYA1HJ-153 | CAPACITOR | 0.015μF, 50V |
| | C415 | QFN41HJ-563 | M CAPACITOR | 0.056μF, 50V |
| | C416 | QFN41HJ-104 | M CAPACITOR | 0.1μF, 50V |
| | C417 | QERF1EM-475 | E CAPACITOR | 4.7μF, 25V |
| | C418 | QERF1HM-104 | E CAPACITOR | 0.1μF, 50V |
| | C419 | QCSA1HJ-391 | CAPACITOR | 390PF, 50V |
| | C420 | QERF1HM-105 | E CAPACITOR | 1μF, 50V |
| | C421 | NCS31HJ-101A | CAPACITOR | 100PF, 50V |
| | C423 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C425 | QERF1HM-104 | E CAPACITOR | 0.1μF, 50V |
| | C426 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | C427 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C428 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C429 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C430 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C431 | QERF0JM-107 | E CAPACITOR | 100μF, 6.3V |
| | C432 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C433 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C434 | QERF1HM-104 | E CAPACITOR | 0.1μF, 50V |
| | C435 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C436 | QERF1HM-474 | E CAPACITOR | 0.47μF, 50V |
| | C437 | QERF1HM-474 | E CAPACITOR | 0.47μF, 50V |
| | C438 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C439 | QERF1HM-474 | E CAPACITOR | 0.47μF, 50V |
| | C440 | QERF1HM-474 | E CAPACITOR | 0.47μF, 50V |
| | C441 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C442 | NCS31HJ-560A | CAPACITOR | 56PF, 50V |
| | C443 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C444 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C445 | NCB31HK-332A | CAPACITOR | 0.0033μF, 50V |
| | C446 | QERF1CM-476 | E CAPACITOR | 47μF, 16V |
| | C447 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C448 | NCS31HJ-390A | CAPACITOR | 39PF, 50V |
| | C449 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C450 | QERF1HM-105 | E CAPACITOR | 1μF, 50V |
| | C451 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C452 | QERF1HM-105 | E CAPACITOR | 1μF, 50V |
| | C453 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C454 | QFN41HJ-223 | M CAPACITOR | 0.022μF, 50V |
| | C455 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C456 | NCS31HJ-101A | CAPACITOR | 100PF, 50V |
| | C457 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C458 | QERF0JM-107 | E CAPACITOR | 100μF, 6.3V |
| | C459 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C461 | QERF0JM-476 | E CAPACITOR | 47μF, 6.3V |
| | C462 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C463 | NCB31HK-102A | CAPACITOR | 0.001μF, 50V |
| | C466 | QCYA1HK-103 | CAPACITOR | 0.01μF, 50V |
| | C468 | NCS31HJ-560A | CAPACITOR | 56PF, 50V |
| | C469 | NCR21CK-473A | CAPACITOR | 0.047μF, 16V |
| | C470 | NCS31HJ-390A | CAPACITOR | 39PF, 50V |
| | C471 | NCS31HJ-330A | CAPACITOR | 33PF, 50V |
| | C472 | QCYA1HK-273 | CAPACITOR | 0.027μF, 50V |
| | C473 | QERF1HM-105 | E CAPACITOR | 1μF, 50V |
| | C474 | QFN41HJ-222 | M CAPACITOR | 0.0022μF, 50V |
| | C475 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C476 | NCB31HK-222A | CAPACITOR | 0.0022μF, 50V |
| | C477 | NCS31HJ-680A | CAPACITOR | 68PF, 50V |
| | C478 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C479 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C480 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C481 | NCB31HK-152A | CAPACITOR | 0.0015μF, 50V |
| | C482 | NCB31HK-332A | CAPACITOR | 0.0033μF, 50V |
| | C483 | QENF1HM-105 | NP E CAPACITOR | 1μF, 50V |
| | C484 | QERF1EM-475 | E CAPACITOR | 4.7μF, 25V |
| | C485 | QEPF1HM-105 | E CAPACITOR | 1μF, 50V |
| | C486 | QERF1HM-105 | E CAPACITOR | 1μF, 50V |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | C487 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C488 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C489 | NCS31HJ-220A | CAPACITOR | 22PF, 50V |
| | C490 | NCS31HJ-220A | CAPACITOR | 22PF, 50V |
| | C491 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C492 | QERF0JM-107 | E CAPACITOR | 100μF, 6.3V |
| | C493 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C494 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C495 | NCS31HJ-100A | CAPACITOR | 10PF, 50V |
| | C496 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C497 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C498 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C499 | NCS31HJ-121A | CAPACITOR | 120PF, 50V |
| | C500 | QERF1CM-106 | E CAPACITOR | 10μF, 16V |
| | C501 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C502 | NCS31HJ-560A | CAPACITOR | 56PF, 50V |
| | C504 | NCS31HJ-8R0A | CAPACITOR | 8PF, 50V |
| | L4 | YU41135-470KY | COIL | 47μH |
| | L5 | PU58201-560J | COIL | 56μH |
| | L13 | PU58201-100J | COIL | 10μH |
| | or | YU41134-100JY | COIL | 10μH |
| | L14 | YU41135-470KY | COIL | 47μH |
| | L15 | PU58201-560J | COIL | 56μH |
| | L17 | YU41135-470KY | COIL | 47μH |
| | L18 | YU41135-470KY | COIL | 47μH |
| | L19 | YU41135-470KY | COIL | 47μH |
| | L20 | YU41135-470KY | COIL | 47μH |
| | L21 | YU41135-470KY | COIL | 47μH |
| | L22 | YU41135-470KY | COIL | 47μH |
| | L26 | YU41135-470KY | COIL | 47μH |
| | L27 | YU41135-470KY | COIL | 47μH |
| | L28 | PU58201-330J | COIL | 33μH |
| | L29 | PU58201-181J | COIL | 180μH |
| | L30 | PU58201-820J | COIL | 82μH |
| | L31 | PU58201-101J | COIL | 100μH |
| | L32 | PU58201-330J | COIL | 33μH |
| | L34 | YU41135-470KY | COIL | 47μH |
| | L35 | PU58201-470J | COIL | 47μH |
| | L36 | PU58201-221J | COIL | 220μH |
| | L37 | YU41135-470KY | COIL | 47μH |
| | L38 | PU58201-560J | COIL | 56μH |
| | L39 | PU58201-270J | COIL | 27μH |
| | L40 | YU41135-470KY | COIL | 47μH |
| | L41 | PU58201-4R7K | COIL | 4.7μH |
| | L42 | YU41135-470KY | COIL | 47μH |
| | L43 | YU41135-470KY | COIL | 47μH |
| | L44 | PU58201-180J | COIL | 18μH |
| | L47 | YU41135-470KY | COIL | 47μH |
| | L48 | PU58201-100J | COIL | 10μH |
| | L49 | PU58201-221J | COIL | 220μH |
| | L50 | PU58201-390J | COIL | 39μH |
| | L51 | PU55843-150J | COIL | 15μH |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | L52 | PU58201-560J | COIL | 56μH |
| | L53 | PU58201-220J | COIL | 22μH |
| | L54 | PU58201-220J | COIL | 22μH |
| | L55 | PU58201-560J | COIL | 56μH |
| | L56 | PU58201-470J | COIL | 47μH |
| | L58 | YU41135-470KY | COIL | 47μH |
| | L59 | YU41135-470KY | COIL | 47μH |
| | L60 | PU53223-221J | COIL | 220μH |
| | L401 | YU41135-470KY | COIL | 47μH |
| | L402 | YU41135-470KY | COIL | 47μH |
| | L404 | PU55843-150J | COIL | 15μH |
| | L405 | YU41135-470KY | COIL | 47μH |
| | L406 | YU41135-470KY | COIL | 47μH |
| | L407 | PU58201-100J | COIL | 10μH |
| | L408 | PU58201-330J | COIL | 33μH |
| | L409 | YU41170 | COIL | |
| | L410 | YU41135-470KY | COIL | 47μH |
| | L411 | PU53618-821J | COIL | 820μH |
| | L412 | PU58201-390J | COIL | 39μH |
| | L413 | PU58201-221J | COIL | 220μH |
| | L414 | PU54710-222 | COIL | 2.2mH |
| | L415 | PU58201-100J | COIL | 10μH |
| | L416 | PU58201-100J | COIL | 10μH |
| | L417 | YU41135-470KY | COIL | 47μH |
| | L418 | YU41135-470KY | COIL | 47μH |
| | L419 | PU54710-822 | COIL | 8.2mH |
| | EQ1 | YU40824 | EQUALIZER | |
| | LPF1 | YU40836 | LOW PASS FILTER | |
| | LPF2 | YU40823 | LOW PASS FILTER | |
| | LPF3 | YU40746 | LOW PASS FILTER | |
| | LPF4 | YU41047 | LOW PASS FILTER | |
| | LPF401 | YU41343 | LOW PASS FILTER | |
| | BPF1 | YU40837 | BAND PASS FILTER | |
| | BPF401 | YU40827 | BAND PASS FILTER | |
| | BPF402 | YU40826 | BAND PASS FILTER | |
| | CF401 | YU40830 | CERAMIC FILTER | |
| | DL401 | YU41168 | DELAY LINE | |
| ⚠ | X401 | YU40829 | CRYSTAL RESONATOR | |
| | TH1 | ERSA39J-102 | THERMISTOR | |
| | TH2 | YU41252 | THERMISTOR | |
| | T401 | YU41169 | COIL | |
| | TP GND1 | YU40581-AY | CHIP TP, GND | |
| | TP GND2 | YU40581-AY | CHIP TP, GND | |
| | TP3 | YU40581-AY | CHIP TP, MAIN EMPHA OUT | |
| | TP4 | YU40581-AY | CHIP TP, SP REC FM OUT | |
| | TP10 | YU40581-AY | CHIP TP, VIDEO OUT | |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|
| | TP11 | YU40581-AY | CHIP TP, DRUM FF |
| | TP15 | YU40581-AY | CHIP TP, COMP SYNC OUT |
| | TP21 | YU40581-AY | CHIP TP, 0.5H DELAYED SIG OUT |
| | TP22 | YU40581-AY | CHIP TP, REC FM MOD OUT |
| | TP23 | YU40581-AY | CHIP TP, 1H DL DEMOD OUT |
| | TP25 | YU40581-AY | CHIP TP, REC FM OUT |
| | TP26 | YU40581-AY | CHIP TP, S NL EMPHA IN |
| | TP27 | YU40581-AY | CHIP TP, S NL EMPHA LIM BAL VCC |
| | TP28 | YU40581-AY | CHIP TP, S NL EMPHA OUT |
| | TP29 | YU40581-AY | CHIP TP, YNR SUBTRACT OUT |
| | TP30 | YU40581-AY | CHIP TP, C YNR IN |
| | TP104 | YU40581-AY | CHIP TP, LP REC FM OUT |
| | TP110 | YU40581-AY | CHIP TP, Y OUT |
| | TP403 | YU40581-AY | CHIP TP, VXO OUT |
| | TP404 | YU40581-AY | CHIP TP, PB COLOR Acc IN |
| | TP411 | YU40581-AY | CHIP TP, COLOR ROT IN |
| | TP420 | YU40581-AY | CHIP TP, S COLOR OUT |
| | TP421 | YU40581-AY | CHIP TP, C COLOR OUT |
| | TP422 | YU40581-AY | CHIP TP, PILOT BURST MIX OUT |
| | TP423 | YU40581-AY | CHIP TP, Fh PHASE COMP OUT |
| | TP424 | YU40581-AY | CHIP TP, 2Fh VCO OUT |
| | TP425 | YU40581-AY | CHIP TP, 7.8K TUNING OUT |
| | TP426 | YU40581-AY | CHIP TP, PB COLOR OUT |
| | TP427 | YU40581-AY | CHIP TP, LP SEARCH CTL-1 |
| | TP428 | YU40581-AY | CHIP TP, LP SEARCH CTL-2 |
| | TP429 | YU40581-AY | CHIP TP, PB 5V |
| | TP430 | YU40581-AY | CHIP TP, GND |
| | CN1 | YU40678-30 | CAP HOUSING |
| | CN2 | YU40105-16 | CAP HOUSING, (BOARD TO BOARD) |
| | CN3 | YU40108-7 | CAP HOUSING |
| | CN4 | YU40108-15 | CAP HOUSING |
| | CN5 | YU40108-14 | CAP HOUSING |
| | CN6 | YU40096-7 | CAP HOUSING |
| | CN7 | YU40105-14 | CAP HOUSING, (BOARD TO BOARD) |

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## 9. CTL SUB BOARD ASSEMBLY ⟨35⟩

| REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|
| PWBA | YB20274A | CTL SUB BOARD ASSY | |
| Q1 | 2SA1577(RS) | TRANSISTOR | |
| Q2 | DTC144EU | TRANSISTOR | |
| Q3 | DTC144EU | TRANSISTOR | |
| R1 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| R2 | NRSA63J-152N | RESISTOR | 1.5KΩ, 1/16W |
| R3 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |

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## 10. AUDIO BOARD ASSEMBLY 〈03〉

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | PWBA | YB10029E-03-C2 | AUDIO BOARD ASSY | |
| | IC1 | AN3380NK | IC | |
| | IC2 | TA7361AP | IC | |
| | IC3 | NJM2904E | IC | |
| | | or LM2904E | IC | |
| | IC101 | AN3977C | IC | |
| | IC102 | AN3931NC | IC | |
| | Q1 | DTC144EU | TRANSISTOR | |
| | Q2 | 2SC4097(QR) | TRANSISTOR | |
| | Q4 | 2SC4081(RS) | TRANSISTOR | |
| | Q5 | DTC124EU | TRANSISTOR | |
| | Q6 | DTC124EU | TRANSISTOR | |
| | Q7 | DTC124EU | TRANSISTOR | |
| | Q8 | DTA114EU | TRANSISTOR | |
| | Q9 | DTA114EU | TRANSISTOR | |
| | Q10 | DTC124EU | TRANSISTOR | |
| | Q11 | DTA124EU | TRANSISTOR | |
| | Q12 | DTC124EU | TRANSISTOR | |
| | Q13 | DTC124EU | TRANSISTOR | |
| | Q14 | DTC124EU | TRANSISTOR | |
| | Q16 | DTA114EU | TRANSISTOR | |
| | Q17 | DTA114EU | TRANSISTOR | |
| | Q18 | DTC144EU | TRANSISTOR | |
| | Q19 | DTC144EU | TRANSISTOR | |
| | Q20 | DTA114EU | TRANSISTOR | |
| | Q22 | DTC143TU | TRANSISTOR | |
| | Q24 | 2SC4081(RS) | TRANSISTOR | |
| | Q26 | DTA114EU | TRANSISTOR | |
| | Q27 | DTA114EU | TRANSISTOR | |
| | Q28 | DTC144EU | TRANSISTOR | |
| | Q29 | DTC124EU | TRANSISTOR | |
| | Q30 | 2SC4081(RS) | TRANSISTOR | |
| | Q101 | DTC124TU | TRANSISTOR | |
| | Q102 | 2SA1576(QRS) | TRANSISTOR | |
| | Q103 | DTC143TU | TRANSISTOR | |
| | Q104 | DTC143TU | TRANSISTOR | |
| | Q105 | DTA124EU | TRANSISTOR | |
| | D1 | DAN202U | DIODE | |
| | D2 | DAN202U | DIODE | |
| | D3 | DAN202U | DIODE | |
| | D5 | DAN202U | DIODE | |
| | D6 | DAN202U | DIODE | |
| | D7 | DAN202U | DIODE | |
| | D10 | DAN202U | DIODE | |
| | D11 | DAN202U | DIODE | |
| | D12 | DAN202U | DIODE | |
| | D13 | DAN202U | DIODE | |
| | D14 | DAN202U | DIODE | |
| | D15 | DAN202U | DIODE | |
| | D16 | DAN202U | DIODE | |
| | D17 | DAN202U | DIODE | |
| | D18 | DAN202U | DIODE | |
| | D101 | DAP202U | DIODE | |
| | R1 | NRSA63J-123N | RESISTOR | 12KΩ, 1/16W |
| | R2 | NRSA63J-153N | RESISTOR | 15KΩ, 1/16W |
| | R3 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R4 | NRSA63J-682N | RESISTOR | 6.8KΩ, 1/16W |
| | R5 | NRSA63J-472N | RESISTOR | 4.7KΩ, 1/16W |
| | R6 | NRSA63J-152N | RESISTOR | 1.5KΩ, 1/16W |
| | R7 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R8 | NRSA63J-100N | RESISTOR | 10Ω, 1/16W |
| | R9 | NVP1301-473N | V RESISTOR, BIAS LEVEL | 47KΩ |
| | R10 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R11 | NRSA63J-104N | RESISTOR | 100KΩ, 1/16W |
| | R12 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R13 | NRSA63J-393N | RESISTOR | 39KΩ, 1/16W |
| | R14 | NRSA63J-4R7N | RESISTOR | 4.7Ω, 1/16W |
| | R15 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R16 | NRSA63J-822N | RESISTOR | 8.2KΩ, 1/16W |
| | R17 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R18 | NRSA63J-562N | RESISTOR | 5.6KΩ, 1/16W |
| | R19 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R20 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R21 | NRSA63J-331N | RESISTOR | 330Ω, 1/16W |
| | R22 | NRSA63J-151N | RESISTOR | 150Ω, 1/16W |
| | R23 | NRSA63J-303N | RESISTOR | 30KΩ, 1/16W |
| | R24 | NRSA63J-392N | RESISTOR | 3.9KΩ, 1/16W |
| | R25 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R26 | NRSA63J-184N | RESISTOR | 180KΩ, 1/16W |
| | R27 | NRSA63J-391N | RESISTOR | 390Ω, 1/16W |
| | R28 | NVP1301-471N | V RESISTOR, N PB LEVEL | 470Ω |
| | R29 | NRSA63J-123N | RESISTOR | 12KΩ, 1/16W |
| | R30 | NRSA63J-563N | RESISTOR | 56KΩ, 1/16W |
| | R31 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R32 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R33 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R34 | NRSA63J-123N | RESISTOR | 12KΩ, 1/16W |
| | R35 | NRSA63J-563N | RESISTOR | 56KΩ, 1/16W |
| | R36 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R37 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R38 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R39 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R40 | NVP1301-103N | V RESISTOR, L IND LEVEL | 10KΩ |
| | R41 | NVP1301-103N | V RESISTOR, R IND LEVEL | 10KΩ |
| | R42 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R43 | NRSA63J-101N | RESISTOR | 100Ω, 1/16W |
| | R44 | NRSA63J-101N | RESISTOR | 100Ω, 1/16W |
| | R45 | NRSA63J-392N | RESISTOR | 3.9KΩ, 1/16W |
| | R46 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R47 | NRSA63J-153N | RESISTOR | 15KΩ, 1/16W |
| | R48 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | R49 | NRSA63J-274N | RESISTOR | 270KΩ, 1/16W |
| | R50 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R51 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R53 | NRSA63J-124N | RESISTOR | 120KΩ, 1/16W |
| | R54 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R56 | NRSA63J-472N | RESISTOR | 4.7KΩ, 1/16W |
| | R57 | NRSA63J-472N | RESISTOR | 4.7KΩ, 1/16W |
| | R58 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R60 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R61 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R62 | NRSA63J-822N | RESISTOR | 8.2KΩ, 1/16W |
| | R63 | NRSA63J-470N | RESISTOR | 47Ω, 1/16W |
| | R64 | NRSA63J-183N | RESISTOR | 18KΩ, 1/16W |
| | R65 | NRSA63J-511N | RESISTOR | 510Ω, 1/16W |
| | R66 | NRSA63J-511N | RESISTOR | 510Ω, 1/16W |
| | R67 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R68 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R69 | NVP1301-331N | V RESISTOR, C REC FM LEVEL | 330Ω |
| | R70 | NRSA63J-273N | RESISTOR | 27KΩ, 1/16W |
| | R71 | NRSA63J-331N | RESISTOR | 330Ω, 1/16W |
| | R72 | NRSA63J-121N | RESISTOR | 120Ω, 1/16W |
| | R73 | NRSA63J-121N | RESISTOR | 120Ω, 1/16W |
| | R74 | NRSA63J-243N | RESISTOR | 24KΩ, 1/16W |
| | R75 | NRSA63J-243N | RESISTOR | 24KΩ, 1/16W |
| | R76 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R77 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R78 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R79 | NRSA63J-511N | RESISTOR | 510Ω, 1/16W |
| | R80 | NRSA63J-151N | RESISTOR | 150Ω, 1/16W |
| | R81 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R82 | NRSA63J-153N | RESISTOR | 15KΩ, 1/16W |
| | R83 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R84 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R86 | NRSA63J-125N | RESISTOR | 1.2MΩ, 1/16W |
| | R87 | NRSA63J-125N | RESISTOR | 1.2MΩ, 1/16W |
| | R88 | NRSA63J-125N | RESISTOR | 1.2MΩ, 1/16W |
| | R89 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R90 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R91 | NRSA63J-113N | RESISTOR | 11KΩ, 1/16W |
| | R92 | NRSA63J-113N | RESISTOR | 11KΩ, 1/16W |
| | R93 | NRSA63J-113N | RESISTOR | 11KΩ, 1/16W |
| | R94 | NRSA63J-113N | RESISTOR | 11KΩ, 1/16W |
| | R95 | NRSA63J-113N | RESISTOR | 11KΩ, 1/16W |
| | R96 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R97 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R98 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R99 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R100 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R101 | NRSA63J-105N | RESISTOR | 1MΩ, 1/16W |
| | R102 | NRSA63J-105N | RESISTOR | 1MΩ, 1/16W |
| | R103 | NRSA63J-105N | RESISTOR | 1MΩ, 1/16W |
| | R104 | NRSA63J-511N | RESISTOR | 510Ω, 1/16W |
| | R105 | NRSA63J-472N | RESISTOR | 4.7KΩ, 1/16W |
| | R106 | NRSA63J-511N | RESISTOR | 510Ω, 1/16W |
| | R107 | NRSA63J-472N | RESISTOR | 4.7KΩ, 1/16W |
| | R108 | NRSA63J-392N | RESISTOR | 3.9KΩ, 1/16W |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | R109 | NRSA63J-243N | RESISTOR | 24KΩ, 1/16W |
| | R110 | NRSA63J-512N | RESISTOR | 5.1KΩ, 1/16W |
| | R111 | NRSA63J-392N | RESISTOR | 3.9KΩ, 1/16W |
| | R112 | PU57567-12 | TRIMM.RESISTOR, L EE LEVEL | |
| | R113 | NRSA63J-334N | RESISTOR | 330KΩ, 1/16W |
| | R114 | NRSA63J-334N | RESISTOR | 330KΩ, 1/16W |
| | R115 | PU57567-12 | TRIMM.RESISTOR, R EE LEVEL | |
| | R116 | NRSA63J-392N | RESISTOR | 3.9KΩ, 1/16W |
| | R117 | NRSA63J-512N | RESISTOR | 5.1KΩ, 1/16W |
| | R118 | NRSA63J-243N | RESISTOR | 24KΩ, 1/16W |
| | R119 | NRSA63J-392N | RESISTOR | 3.9KΩ, 1/16W |
| | R120 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R121 | NRSA63J-472N | RESISTOR | 4.7KΩ, 1/16W |
| | R123 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R124 | NRSA63J-472N | RESISTOR | 4.7KΩ, 1/16W |
| | R127 | NRSA63J-202N | RESISTOR | 2KΩ, 1/16W |
| | R128 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R130 | PU57567-28 | TRIMM.RESISTOR, LIM LEVEL | |
| | R131 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R132 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R133 | NRSA63J-202N | RESISTOR | 2KΩ, 1/16W |
| | R134 | NRSA63J-362N | RESISTOR | 3.6KΩ, 1/16W |
| | R135 | NRSA63J-822N | RESISTOR | 8.2KΩ, 1/16W |
| | R136 | PU57567-7 | TRIMM.RESISTOR, L REC LEVEL | |
| | R137 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R138 | NRSA63J-202N | RESISTOR | 2KΩ, 1/16W |
| | R139 | NRSA63J-362N | RESISTOR | 3.6KΩ, 1/16W |
| | R140 | NRSA63J-822N | RESISTOR | 8.2KΩ, 1/16W |
| | R141 | PU57567-7 | TRIMM.RESISTOR, R REC LEVEL | |
| | R142 | PU57567-34 | T.RESISTOR, L PB Hi-Fi LEVEL | |
| | R143 | PU57567-34 | T.RESISTOR, L PB Hi-Fi LEVEL | |
| | R144 | PU57567-30 | T.RESISTOR, L FINE CARRIER | |
| | R145 | PU57567-1 | T.RESISTOR, L CARRIER | |
| | R146 | PU57567-32 | T.RESISTOR, R FINE CARRIER | |
| | R147 | PU57567-12 | T.RESISTOR, R CARRIER | |
| | R148 | PU57567-34 | T.RESISTOR, R PB Hi-Fi LEVEL | |
| | R149 | PU57567-34 | T.RESISTOR, R PB Hi-Fi LEVEL | |
| | R150 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R151 | NRSA63J-271N | RESISTOR | 270Ω, 1/16W |
| | R152 | NRSA63J-273N | RESISTOR | 27KΩ, 1/16W |
| | R153 | NRSA63J-823N | RESISTOR | 82KΩ, 1/16W |
| | R155 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R156 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R157 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R158 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R159 | NRSA63J-272N | RESISTOR | 2.7KΩ, 1/16W |
| | R160 | NVP1301-222N | V RESISTOR, S REC FM LEVEL | 2.2KΩ |
| | R161 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | C1 | NEH11CM-106NZ | E CAPACITOR | 10μF |
| | C2 | NEH10JM-226NZ | E CAPACITOR | 22μF |
| | C3 | NEN10JM-106NZ | E CAPACITOR | 10μF |
| | C4 | NEH11CM-106NZ | E CAPACITOR | 10μF |
| | C5 | NEH10JM-226NZ | E CAPACITOR | 22μF |
| | C6 | NEH10GM-336NZ | E CAPACITOR | 33μF |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | C7 | QEF81CM-226 | TANTAL CAPACITOR | 22μF, 16V |
| | C8 | NCB31HK-102A | CAPACITOR | 0.001μF, 50V |
| | C9 | NCS31HJ-101A | CAPACITOR | 100PF, 50V |
| | C10 | QEF81AM-336 | TANTAL CAPACITOR | 33μF, 10V |
| | C11 | NEH10JM-226NZ | E CAPACITOR | 22μF |
| | C12 | NEH10JM-226NZ | E CAPACITOR | 22μF |
| | C13 | NEH11CM-106NZ | E CAPACITOR | 10μF |
| | C14 | NEN10JM-106NZ | E CAPACITOR | 10μF |
| | C15 | NEH10JM-226NZ | E CAPACITOR | 22μF |
| | C16 | NEH11CM-106NZ | E CAPACITOR | 10μF |
| | C17 | NCB31HK-331A | CAPACITOR | 330PF, 50V |
| | C18 | QFZ9011-333 | MM CAPACITOR | 0.033μF |
| | C19 | NCB31HK-561A | CAPACITOR | 560PF, 50V |
| | C20 | NCB31HK-392A | CAPACITOR | 0.0039μF, 50V |
| | C21 | QEF81EM-106 | E CAPACITOR | 10μF, 25V |
| | C22 | QEF81DM-225 | E CAPACITOR | 2.2μF, 20V |
| | C23 | QCDA1EM-273 | CAPACITOR | 0.027μF, 25V |
| | C24 | NCS31HJ-221A | CAPACITOR | 220PF, 50V |
| | C25 | QEF81CM-225 | E CAPACITOR | 2.2μF, 16V |
| | C26 | NEH10JM-226NZ | E CAPACITOR | 22μF |
| | C27 | NEH10GM-476NZ | E CAPACITOR | 47μF |
| | C28 | QCDA1EM-333 | CAPACITOR | 0.033μF, 25V |
| | C29 | QCDA1EM-333 | CAPACITOR | 0.033μF, 25V |
| | C30 | NEH11CM-106NZ | E CAPACITOR | 10μF |
| | C32 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C33 | QEF81VM-224 | TANTAL CAPACITOR | 0.22μF, 35V |
| | C34 | NEH11CM-106NZ | E CAPACITOR | 10μF |
| | C35 | NEH11HM-105NZ | E CAPACITOR | 1μF |
| | C36 | NEH11CM-106NZ | E CAPACITOR | 10μF |
| | C37 | NEH10JM-226NZ | E CAPACITOR | 22μF |
| | C38 | QEF81EM-106 | E CAPACITOR | 10μF, 25V |
| | C39 | NEH10JM-226NZ | E CAPACITOR | 22μF |
| | C40 | NEH11CM-106NZ | E CAPACITOR | 10μF |
| | C41 | NCS31HJ-271A | CAPACITOR | 270PF, 50V |
| | C42 | NEH11HM-474NZ | E CAPACITOR | 0.47μF |
| | C43 | NCS31HJ-271A | CAPACITOR | 270PF, 50V |
| | C44 | NEH11HM-474NZ | E CAPACITOR | 0.47μF |
| | C45 | NEH11HM-474NZ | E CAPACITOR | 0.47μF |
| | C46 | NEH11HM-474NZ | E CAPACITOR | 0.47μF |
| | C47 | QEF81CM-225 | E CAPACITOR | 2.2μF, 16V |
| | C49 | QCYA1EK-223 | CAPACITOR | 0.022μF, 25V |
| | C50 | QCFA1EZ-104 | CAPACITOR | 0.1μF, 25V |
| | C51 | QCFA1EZ-104 | CAPACITOR | 0.1μF, 25V |
| | C52 | QCFA1EZ-104 | CAPACITOR | 0.1μF, 25V |
| | C53 | QCYA1EK-223 | CAPACITOR | 0.022μF, 25V |
| | C54 | NEH10JM-107NP | E CAPACITOR | 100μF |
| | C55 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C56 | QCFA1EZ-104 | CAPACITOR | 0.1μF, 25V |
| | C57 | NCS31HJ-330A | CAPACITOR | 33PF, 50V |
| | C58 | NCB31HK-331A | CAPACITOR | 330PF, 50V |
| | C59 | NCB31HK-102A | CAPACITOR | 0.001μF, 50V |
| | C60 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C61 | NCS31HJ-271A | CAPACITOR | 270PF, 50V |
| | C62 | NCS31HJ-271A | CAPACITOR | 270PF, 50V |
| | C63 | NCB31HK-332A | CAPACITOR | 0.0033μF, 50V |
| | C64 | QEF81EM-106 | E CAPACITOR | 10μF, 25V |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | C65 | QEF81EM-106 | E CAPACITOR | 10μF, 25V |
| | C67 | NEH11CM-106NZ | E CAPACITOR | 10μF |
| | C68 | QEF81VM-105 | E CAPACITOR | 1μF, 35V |
| | C70 | QCFA1EZ-473 | CAPACITOR | 0.047μF, 25V |
| | C71 | QCFA1EZ-473 | CAPACITOR | 0.047μF, 25V |
| | C72 | NCB31HK-561A | CAPACITOR | 560PF, 50V |
| | C73 | NCB31HK-561A | CAPACITOR | 560PF, 50V |
| | C77 | QEF81EM-106 | E CAPACITOR | 10μF, 25V |
| | C78 | NCB31EK-822A | CAPACITOR | 0.0082μF, 25V |
| | C79 | NCB31HK-332A | CAPACITOR | 0.0033μF, 50V |
| | C80 | NCB31HK-332A | CAPACITOR | 0.0033μF, 50V |
| | C81 | NEN11EM-225NZ | E CAPACITOR | 2.2μF |
| | C86 | NEH10GM-476NZ | E CAPACITOR | 47μF |
| | C87 | NEH10GM-336NZ | E CAPACITOR | 33μF |
| | C88 | NEH10GM-336NZ | E CAPACITOR | 33μF |
| | C89 | NCB31HK-332A | CAPACITOR | 0.0033μF, 50V |
| | C90 | NCB31HK-332A | CAPACITOR | 0.0033μF, 50V |
| | C91 | NCB31HK-392A | CAPACITOR | 0.0039μF, 50V |
| | C92 | NCB31EK-472A | CAPACITOR | 0.0047μF, 25V |
| | C93 | NCB31HK-272A | CAPACITOR | 0.0027μF, 50V |
| | C94 | NCB31HK-471A | CAPACITOR | 470PF, 50V |
| | C95 | NCS31HJ-181A | CAPACITOR | 180PF, 50V |
| | C96 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C101 | NCB31HK-472A | CAPACITOR | 0.0047μF, 50V |
| | C102 | NCB31HK-472A | CAPACITOR | 0.0047μF, 50V |
| | C103 | NCS31HJ-330A | CAPACITOR | 33PF, 50V |
| | C104 | QCF81CZ-474 | CAPACITOR | 0.47μF, 16V |
| | C105 | QCFA1EZ-473 | CAPACITOR | 0.047μF, 25V |
| | C106 | QCFA1EZ-473 | CAPACITOR | 0.047μF, 25V |
| | C107 | QCYA1HK-153 | CAPACITOR | 0.015μF, 50V |
| | C109 | NCB31HK-102A | CAPACITOR | 0.001μF, 50V |
| | C110 | QCFA1EZ-473 | CAPACITOR | 0.047μF, 25V |
| | C111 | QCFA1EZ-473 | CAPACITOR | 0.047μF, 25V |
| | C112 | NCB31HK-102A | CAPACITOR | 0.001μF, 50V |
| | C114 | QCYA1HK-153 | CAPACITOR | 0.015μF, 50V |
| | C115 | NCB31HK-222A | CAPACITOR | 0.0022μF, 50V |
| | C116 | NCB31HK-222A | CAPACITOR | 0.0022μF, 50V |
| | C117 | QCF81CZ-105 | CAPACITOR | 1μF, 16V |
| | C118 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C119 | NCB31EK-822A | CAPACITOR | 0.0082μF, 25V |
| | C120 | QCF81EZ-224ZL | CAPACITOR | 0.22μF, 25V |
| | C121 | NCS31HJ-101A | CAPACITOR | 100PF, 50V |
| | C122 | NCB31HK-561A | CAPACITOR | 560PF, 50V |
| | C123 | QCF81EZ-224ZL | CAPACITOR | 0.22μF, 25V |
| | C124 | NCB31EK-822A | CAPACITOR | 0.0082μF, 25V |
| | C125 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C126 | QCF81CZ-105 | CAPACITOR | 1μF, 16V |
| | C127 | QCFA1EZ-104 | CAPACITOR | 0.1μF, 25V |
| | C128 | NCB31HK-471A | CAPACITOR | 470PF, 50V |
| | C129 | NCB31HK-222A | CAPACITOR | 0.0022μF, 50V |
| | C130 | QCF81CZ-105 | CAPACITOR | 1μF, 16V |
| | C131 | NCB31HK-392A | CAPACITOR | 0.0039μF, 50V |
| | C132 | QCFA1EZ-104 | CAPACITOR | 0.1μF, 25V |
| | C133 | NCB31HK-471A | CAPACITOR | 470PF, 50V |
| | C134 | NCB31HK-222A | CAPACITOR | 0.0022μF, 50V |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | C135 | QCF81CZ-105 | CAPACITOR | 1μF, 16V |
| | C136 | NCB31HK-392A | CAPACITOR | 0.0039μF, 50V |
| | C137 | QCFA1EZ-104 | CAPACITOR | 0.1μF, 25V |
| | C138 | QCFA1EZ-104 | CAPACITOR | 0.1μF, 25V |
| | C139 | QCF81CZ-105 | CAPACITOR | 1μF, 16V |
| | C140 | QCF81CZ-105 | CAPACITOR | 1μF, 16V |
| | L1 | PU59188-101K | COIL | 100μH |
| | L2 | PU59188-101K | COIL | 100μH |
| | L3 | PU53607-472 | COIL | 4.7mH |
| | L4 | PU59188-221K | COIL | 220μH |
| | L5 | PU59188-101K | COIL | 100μH |
| | L7 | YU40932-P | OSC COIL | |
| | BPF1 | YU41191-P | BAND PASS FILTER | |
| | BPF2 | YU41192-P | BAND PASS FILTER | |
| | SLD1 | YU41257 | SHIELD CASE | |
| | SLD2 | YU41317A | SHIELD PLATE ASSY | |
| | SLD3 | YU41258 | SHIELD PLATE | |
| | SLD4 | YU41316 | INSULATOR | |
| | SLD5 | YU41338 | SHIELD PLATE | |
| | SLD6 | YU41308 | SHIELD CAP | |
| | TP1 | YU40581-AY | CHIP TP, GND | |
| | TP2 | YU40581-AY | CHIP TP, L EXT IN | |
| | TP3 | YU40581-AY | CHIP TP, L MOD OUT | |
| | TP4 | YU40581-AY | CHIP TP, L DEMOD IN | |
| | TP5 | YU40581-AY | CHIP TP, R DEMOD IN | |
| | TP6 | YU40581-AY | CHIP TP, N REC OUT | |
| | TP7 | YU40581-AY | CHIP TP, N PB LINE AMP IN | |
| | TP8 | YU40581-AY | CHIP TP, REC FM OUT | |
| | TP9 | YU40581-AY | CHIP TP, AUDIO ERASE SIG OUT | |
| | TP10 | YU40581-AY | CHIP TP, CTL ERASE SIG OUT | |
| | TP11 | YU40581-AY | CHIP TP, REC BIAS | |
| | TP12 | YU40581-AY | CHIP TP, REC BIAS GND | |
| | TP13 | YU40581-AY | CHIP TP, REC LCH | |
| | TP14 | YU40581-AY | CHIP TP, REC RCH | |
| | TP15 | YU40581-AY | CHIP TP, R MOD OUT | |
| | TP16 | YU40581-AY | CHIP TP, PB FM OUT | |
| | TP17 | YU40581-AY | CHIP TP, PB HI-FI AGC OUT | |
| | TP18 | YU40581-AY | CHIP TP, AUDIO L OUT | |
| | TP19 | YU40581-AY | CHIP TP, AUDIO R OUT | |
| | TP20 | YU40581-AY | CHIP TP, GND | |
| | CN1 | YU40105-26 | CAP HOUSING | |
| | CN2 | YU40108-4 | CAP HOUSING | |
| | CN3 | YU40108-13 | CAP HOUSING | |
| | CN4 | YU40096-5Y | CAP HOUSING | |
| | CN5 | YU40108-9 | CAP HOUSING | |

## — REC PROT/EQ BOARD ASSEMBLY —

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | PWBA | YB20271A | REC PROT/EQ BOARD ASSY | |
| | Q21 | DTC144EU | TRANSISTOR | |
| | D8 | DAP202U | DIODE | |
| | R162 | QRSA08J-103YN | RESISTOR | 10KΩ, 1/10W |

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## 11. PRE AMP BOARD ASSEMBLY ⟨04⟩

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | PWBA | YB20168A-01 | PRE AMP BOARD ASSY | |
| | IC1 | TA8609F | IC | |
| | IC2 | 5VT16 | IC | |
| | Q1 | 2SC3936(BC) | TRANSISTOR | |
| | Q2 | 2SC3936(BC) | TRANSISTOR | |
| | Q3 | 2SC4116(YGL) | TRANSISTOR | |
| | Q4 | 2SC4116(YGL) | TRANSISTOR | |
| | Q5 | 2SC4116(YGL) | TRANSISTOR | |
| | Q6 | 2SC4116(YGL) | TRANSISTOR | |
| | Q7 | 2SC4116(YGL) | TRANSISTOR | |
| | Q8 | 2SC4116(YGL) | TRANSISTOR | |
| | Q9 | 2SC4081(QRS) | TRANSISTOR | |
| | Q10 | 2SA1577(PQ) | TRANSISTOR | |
| | Q11 | 2SC4081(QRS) | TRANSISTOR | |
| | Q12 | 2SC4081(QRS) | TRANSISTOR | |
| | Q13 | DTC144EU | TRANSISTOR | |
| | Q14 | 2SA1577(PQ) | TRANSISTOR | |
| | Q15 | DTC144EU | TRANSISTOR | |
| | Q16 | DTC144EU | TRANSISTOR | |
| | D1 | DAP202U | DIODE | |
| | | or MA141WA | DIODE | |
| | D2 | DAP202U | DIODE | |
| | | or MA141WA | DIODE | |
| | D3 | DAN202U | DIODE | |
| | | or MA141WK | DIODE | |
| | D4 | DAN202U | DIODE | |
| | | or MA141WK | DIODE | |
| | R1 | NRSA63J-680N | RESISTOR | 68Ω, 1/16W |
| | R2 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R3 | NRSA63J-100N | RESISTOR | 10Ω, 1/16W |
| | R4 | NVP1301-471N | V RESISTOR, SP CH2 Ω | 470Ω |
| | R5 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R6 | NVP1301-471N | V RESISTOR, LP CH1 Ω | 470Ω |
| | R7 | NRSA63J-100N | RESISTOR | 10Ω, 1/16W |
| | R8 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R9 | NRSA63J-680N | RESISTOR | 68Ω, 1/16W |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|
| | R10 | NVP1301-471N | V RESISTOR, LP CH2 Q 470Ω |
| | R11 | NRSA63J-272N | RESISTOR 2.7KΩ, 1/16W |
| | R12 | NRSA63J-272N | RESISTOR 2.7KΩ, 1/16W |
| | R13 | NVP1301-471N | V RESISTOR, SP CH1 Q 470Ω |
| | R14 | NRSA63J-272N | RESISTOR 2.7KΩ, 1/16W |
| | R15 | NRSA63J-272N | RESISTOR 2.7KΩ, 1/16W |
| | R16 | NRSA63J-103N | RESISTOR 10KΩ, 1/16W |
| | R17 | NRSA63J-103N | RESISTOR 10KΩ, 1/16W |
| | R18 | NRSA63J-122N | RESISTOR 1.2KΩ, 1/16W |
| | R19 | NRSA63J-122N | RESISTOR 1.2KΩ, 1/16W |
| | R20 | NRSA63J-273N | RESISTOR 27KΩ, 1/16W |
| | R21 | NRSA63J-103N | RESISTOR 10KΩ, 1/16W |
| | R22 | NRSA63J-472N | RESISTOR 4.7KΩ, 1/16W |
| | R23 | NRSA63J-273N | RESISTOR 27KΩ, 1/16W |
| | R24 | NRSA63J-273N | RESISTOR 27KΩ, 1/16W |
| | R25 | NRSA63J-273N | RESISTOR 27KΩ, 1/16W |
| | R26 | NRSA63J-103N | RESISTOR 10KΩ, 1/16W |
| | R27 | NRSA63J-102N | RESISTOR 1KΩ, 1/16W |
| | C1 | QEF81CM-105 | TANTAL CAPACITOR 1μF, 16V |
| | C2 | QEF81CM-105 | TANTAL CAPACITOR 1μF, 16V |
| | C3 | NCB31EK-103A | CAPACITOR 0.01μF, 25V |
| | C4 | QER40JM-476ZE | E CAPACITOR 47μF, 6.3V |
| | C5 | QEF81CM-105 | TANTAL CAPACITOR 1μF, 16V |
| | C6 | NCS31HJ-101A | CAPACITOR 100PF, 50V |
| | C7 | QEF81CM-105 | TANTAL CAPACITOR 1μF, 16V |
| | C8 | QEF81CM-105 | TANTAL CAPACITOR 1μF, 16V |
| | C9 | NCB31EK-103A | CAPACITOR 0.01μF, 25V |
| | C10 | NCB31EK-103A | CAPACITOR 0.01μF, 25V |
| | C11 | QEF81CM-105 | TANTAL CAPACITOR 1μF, 16V |
| | C12 | NCB31EK-103A | CAPACITOR 0.01μF, 25V |
| | C13 | NCB31EK-103A | CAPACITOR 0.01μF, 25V |
| | C14 | NCB31EK-103A | CAPACITOR 0.01μF, 25V |
| | C15 | PU56274-200 | TRIMMER CAP, SP CH1 F0 20PF |
| | C16 | PU56274-200 | TRIMMER CAP, SP CH2 F0 20PF |
| | C17 | NCB31EK-103A | CAPACITOR 0.01μF, 25V |
| | C18 | PU56274-200 | TRIMMER CAP, LP CH1 F0 20PF |
| | C19 | NCB31EK-103A | CAPACITOR 0.01μF, 25V |
| | C20 | PU56274-200 | TRIMMER CAP, LP CH2 F0 20PF |
| | C21 | NCB31EK-103A | CAPACITOR 0.01μF, 25V |
| | C22 | NCB31EK-103A | CAPACITOR 0.01μF, 25V |
| | C23 | NCB31EK-103A | CAPACITOR 0.01μF, 25V |
| | C24 | NCB31EK-103A | CAPACITOR 0.01μF, 25V |
| | C25 | NCB31EK-103A | CAPACITOR 0.01μF, 25V |
| | C26 | NCB31EK-103A | CAPACITOR 0.01μF, 25V |
| | C27 | NCB31HK-271A | CAPACITOR 270PF, 50V |
| | C28 | NEH10JM-226NZ | E CAPACITOR 22μF |
| | C29 | NCB31EK-103A | CAPACITOR 0.01μF, 25V |
| | L1 | YU40249-101KY | COIL 100μH |
| | L2 | YU40249-100JY | COIL 10μH |
| | L3 | PU56175 | S.TRANS |
| | L4 | PU58201-1R2K | COIL 1.2μH |
| | CN1 | YU40593-15 | CAP HOUSING |

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## 12. MIC AMP BOARD ASSEMBLY ⟨07⟩

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|
| | PWBA | YB30043A-05 | MIC AMP BOARD ASSY |
| | IC701 | M5282FP | IC |
| | IC702 | M5282FP | IC |
| | IC703 | BA3308 | IC |
| | R701 | NRSA63J-123N | RESISTOR 12KΩ, 1/16W |
| | R702 | NRSA63J-102N | RESISTOR 1KΩ, 1/16W |
| | R704 | NRSA63J-102N | RESISTOR 1KΩ, 1/16W |
| | R705 | NRSA63J-473N | RESISTOR 47KΩ, 1/16W |
| | R706 | NRSA63J-221N | RESISTOR 220Ω, 1/16W |
| | R707 | NRSA63J-223N | RESISTOR 22KΩ, 1/16W |
| | R708 | NRSA63J-104N | RESISTOR 100KΩ, 1/16W |
| | R709 | NRSA63J-103N | RESISTOR 10KΩ, 1/16W |
| | R710 | NRSA63J-682N | RESISTOR 6.8KΩ, 1/16W |
| | R711 | NRSA63J-123N | RESISTOR 12KΩ, 1/16W |
| | R712 | NRSA63J-102N | RESISTOR 1KΩ, 1/16W |
| | R714 | NRSA63J-102N | RESISTOR 1KΩ, 1/16W |
| | R715 | NRSA63J-473N | RESISTOR 47KΩ, 1/16W |
| | R716 | NRSA63J-221N | RESISTOR 220Ω, 1/16W |
| | R717 | NRSA63J-223N | RESISTOR 22KΩ, 1/16W |
| | R721 | NRSA63J-121N | RESISTOR 120Ω, 1/16W |
| | R722 | NRSA63J-392N | RESISTOR 3.9KΩ, 1/16W |
| | R723 | NRSA63J-682N | RESISTOR 6.8KΩ, 1/16W |
| | R724 | NRSA63J-105N | RESISTOR 1MΩ, 1/16W |
| | R725 | NRSA63J-682N | RESISTOR 6.8KΩ, 1/16W |
| | R726 | NRSA63J-392N | RESISTOR 3.9KΩ, 1/16W |
| | R727 | NRSA63J-121N | RESISTOR 120Ω, 1/16W |
| | R728 | NRSA63J-101N | RESISTOR 100Ω, 1/16W |
| | C701 | QERF1HM-225 | E CAPACITOR 2.2μF, 50V |
| | C703 | QERF1EM-475 | E CAPACITOR 4.7μF, 25V |
| | C704 | QERF0JM-226 | E CAPACITOR 22μF, 6.3V |
| | C705 | NCB31HK-102A | CAPACITOR 0.001μF, 50V |
| | C706 | QERF1CM-106 | E CAPACITOR 10μF, 16V |
| | C707 | NCS31HJ-101A | CAPACITOR 100PF, 50V |
| | C708 | QERF1EM-475 | E CAPACITOR 4.7μF, 25V |
| | C709 | QERF0JM-226 | E CAPACITOR 22μF, 6.3V |
| | C711 | QERF0JM-226 | E CAPACITOR 22μF, 6.3V |
| | C713 | QERF1EM-475 | E CAPACITOR 4.7μF, 25V |
| | C714 | QERF0JM-226 | E CAPACITOR 22μF, 6.3V |
| | C715 | NCB31HK-102A | CAPACITOR 0.001μF, 50V |
| | C716 | QERF1CM-106 | E CAPACITOR 10μF, 16V |
| | C717 | NCS31HJ-101A | CAPACITOR 100PF, 50V |
| | C718 | QERF1EM-475 | E CAPACITOR 4.7μF, 25V |
| | C721 | QERF1CM-106 | E CAPACITOR 10μF, 16V |
| | C722 | QERF1CM-106 | E CAPACITOR 10μF, 16V |
| | C723 | QERF1CM-106 | E CAPACITOR 10μF, 16V |
| | C724 | QERF1EM-475 | E CAPACITOR 4.7μF, 25V |
| | C725 | QERF0JM-107 | E CAPACITOR 100μF, 6.3V |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | C726 | QERF1CM-106 | E CAPACITOR | 10µF, 16V |
| | C727 | QERF1CM-106 | E CAPACITOR | 10µF, 16V |
| | C728 | QERF1CM-106 | E CAPACITOR | 10µF, 16V |
| | CN701 | YU40096-5Y | CAP HOUSING | |
| | CN702 | YU40096-5 | CAP HOUSING | |

### — MIC AMP BOARD ASSEMBLY —

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | PWBA | YB20281A | MIC 5V BOARD ASSY | |
| | Q701 | DTA143EU | TRANSISTOR | |
| | Q702 | DTC143EU | TRANSISTOR | |
| | R718 | QRSA08J-271YN | RESISTOR | 270Ω, 1/10W |
| | R719 | QRSA08J-220YN | RESISTOR | 22Ω, 1/10W |

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## 13. REAR BOARD ASSEMBLY ⟨12⟩

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | PWBA | YB30042B-01 | REAR BOARD ASSY | |
| | R1 | QVZ3606-102 | V RESISTOR, V. LOCK | 1KΩ |
| | SW1 | YU40137 | SLIDE SWITCH | |
| | SW2 | YU40137 | SLIDE SWITCH | |
| | CN1 | YU40096-3 | CAP HOUSING | |
| | CN2 | YU40096-4 | CAP HOUSING | |
| | CN3 | YU40105-10 | CAP HOUSING | |

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## 14. IMAGER BOARD ASSEMBLY ⟨21⟩

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | PWBA | YB20180E-02-C | IMEGER BOARD ASSY | |
| | IC102 | UPD9319CGC | IC | |
| | IC103 | UPD6147G | IC | |
| | IC104 | UPC2370GH | IC | |
| | IC105 | H8D7128 | IC | |
| | IC106 | UPD6148GS | IC | |
| | Q1 | 2SA1532(BC) | TRANSISTOR | |
| | or | 2SA1576(QR) | TRANSISTOR | |
| | Q2 | 2SD1819(RS) | TRANSISTOR | |
| | Q3 | 2SA1532(BC) | TRANSISTOR | |
| | Q4 | 2SA1532(BC) | TRANSISTOR | |
| | or | 2SA1576(QR) | TRANSISTOR | |
| | Q5 | 2SA1532(BC) | TRANSISTOR | |
| | or | 2SA1576(QR) | TRANSISTOR | |
| | Q6 | 2SA1532(BC) | TRANSISTOR | |
| | or | 2SA1576(QR) | TRANSISTOR | |
| | Q7 | 2SA1532(BC) | TRANSISTOR | |
| | or | 2SA1576(QR) | TRANSISTOR | |
| | Q8 | 2SA1532(BC) | TRANSISTOR | |
| | or | 2SA1576(QR) | TRANSISTOR | |
| | Q9 | DTA124EU | TRANSISTOR | |
| | Q10 | 2SC3936(BC) | TRANSISTOR | |
| | or | 2SC4098(PQ) | TRANSISTOR | |
| | Q11 | 2SA1532(BC) | TRANSISTOR | |
| | or | 2SA1576(QR) | TRANSISTOR | |
| | Q12 | 2SC3936(BC) | TRANSISTOR | |
| | or | 2SC4098(PQ) | TRANSISTOR | |
| | Q13 | 2SC3936(BC) | TRANSISTOR | |
| | or | 2SC4098(PQ) | TRANSISTOR | |
| | Q14 | 2SC4181 | TRANSISTOR | |
| | Q15 | 2SC3936(BC) | TRANSISTOR | |
| | or | 2SC4098(PQ) | TRANSISTOR | |
| | Q16 | 2SC4181 | TRANSISTOR | |
| | Q17 | 2SA1532(BC) | TRANSISTOR | |
| | Q18 | 2SD1819(RS) | TRANSISTOR | |
| | D101 | MA141WA | DIODE | |
| | D102 | MA141WA | DIODE | |
| | R1 | NRSA63J-105N | RESISTOR | 1MΩ, 1/16W |
| | R2 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R3 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R6 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R7 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R9 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R10 | NRSA63J-220N | RESISTOR | 22Ω, 1/16W |
| | R11 | NRSA63J-122N | RESISTOR | 1.2KΩ, 1/16W |
| | R12 | NRSA63J-270N | RESISTOR | 27Ω, 1/16W |
| | R13 | NRSA63J-270N | RESISTOR | 27Ω, 1/16W |
| | R14 | NRSA63J-331N | RESISTOR | 330Ω, 1/16W |
| | R15 | NRSA63J-121N | RESISTOR | 120Ω, 1/16W |
| | R16 | NRSA63J-123N | RESISTOR | 12KΩ, 1/16W |
| | R17 | NRSA63J-512N | RESISTOR | 5.1KΩ, 1/16W |
| | R18 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R19 | YU40808-104X | V RESISTOR, BLOOMING | |
| | R20 | NRSA63J-183N | RESISTOR | 18KΩ, 1/16W |
| | R21 | NRSA63J-184N | RESISTOR | 180KΩ, 1/16W |
| | R22 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R23 | NRSA63J-271N | RESISTOR | 270Ω, 1/16W |
| | R24 | NRSA63J-303N | RESISTOR | 30KΩ, 1/16W |
| | R25 | NRSA63J-303N | RESISTOR | 30KΩ, 1/16W |
| | R26 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R27 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R28 | NRSA63J-220N | RESISTOR | 22Ω, 1/16W |
| | R29 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R30 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R31 | NRSA63G-243N | RESISTOR | 24KΩ, 1/16W |
| | R32 | NRSA63G-273N | RESISTOR | 27KΩ, 1/16W |
| | R33 | NRSA63J-183N | RESISTOR | 18KΩ, 1/16W |
| | R34 | NRSA63J-243N | RESISTOR | 24KΩ, 1/16W |
| | R35 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | R36 | YU40808-103X | V RESISTOR, B SET UP | |
| | R37 | YU40808-103X | V RESISTOR, R SET UP | |
| | R38 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R39 | NRSA63J-682N | RESISTOR | 6.8KΩ, 1/16W |
| | R40 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R41 | NRSA63J-104N | RESISTOR | 100KΩ, 1/16W |
| | R42 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R43 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R44 | YU40808-103X | V RESISTOR, B LEVEL | |
| | R45 | YU40808-103X | V RESISTOR, R LEVEL | |
| | R46 | NRSA63J-183N | RESISTOR | 18KΩ, 1/16W |
| | R47 | NRSA63J-183N | RESISTOR | 18KΩ, 1/16W |
| | R48 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R49 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R50 | NRSA63J-562N | RESISTOR | 5.6KΩ, 1/16W |
| | R51 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R52 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R53 | NRSA63J-562N | RESISTOR | 5.6KΩ, 1/16W |
| | R54 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R55 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R57 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R58 | NRSA63J-563N | RESISTOR | 56KΩ, 1/16W |
| | R59 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R60 | NRSA63J-183N | RESISTOR | 18KΩ, 1/16W |
| | R61 | YU40808-103X | V RESISTOR, AGC LEVEL | |
| | R62 | NRSA63J-562N | RESISTOR | 5.6KΩ, 1/16W |
| | R63 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R64 | NRSA63J-563N | RESISTOR | 56KΩ, 1/16W |
| | R65 | NRSA63J-183N | RESISTOR | 18KΩ, 1/16W |
| | R66 | YU40808-103X | V RESISTOR, B SEP | |
| | R67 | YU40808-103X | V RESISTOR, R SEP | |
| | R68 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R69 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R70 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R71 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R72 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R73 | NRSA63J-681N | RESISTOR | 680Ω, 1/16W |
| | R74 | NRSA63J-680N | RESISTOR | 68Ω, 1/16W |
| | R75 | NRSA63J-560N | RESISTOR | 56Ω, 1/16W |
| | R76 | NRSA63J-100N | RESISTOR | 10Ω, 1/16W |
| | R77 | NRSA63J-272N | RESISTOR | 2.7KΩ, 1/16W |
| | R78 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R79 | NRSA63J-182N | RESISTOR | 1.8KΩ, 1/16W |
| | R80 | NRSA63J-681N | RESISTOR | 680Ω, 1/16W |
| | R81 | NRSA63J-221N | RESISTOR | 220Ω, 1/16W |
| | R82 | NRSA63J-681N | RESISTOR | 680Ω, 1/16W |
| | R83 | NRSA63J-331N | RESISTOR | 330Ω, 1/16W |
| | R84 | NRSA63J-221N | RESISTOR | 220Ω, 1/16W |
| | R85 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R86 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R87 | NRSA63J-182N | RESISTOR | 1.8KΩ, 1/16W |
| | R88 | YU40808-103X | V RESISTOR, Y SET UP LEVEL | |
| | R89 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R90 | NRSA63J-562N | RESISTOR | 5.6KΩ, 1/16W |
| | R91 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R92 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | R93 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R94 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R95 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R96 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R97 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R98 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R99 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R100 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R101 | NRSA63J-472N | RESISTOR | 4.7KΩ, 1/16W |
| | R102 | NRSA63J-104N | RESISTOR | 100KΩ, 1/16W |
| | R103 | QRSA08J-0R0Y | RESISTOR | 0Ω, 1/10W |
| | R104 | NRSA63J-100N | RESISTOR | 10Ω, 1/16W |
| | R105 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R106 | NVP1301-103N | V RESISTOR, PHOTO SHIELD LEVEL | 10KΩ |
| | R107 | NRSA63G-104N | RESISTOR | 100KΩ, 1/16W |
| | R108 | QRD161J-102 | RESISTOR | 1KΩ, 1/6W |
| | R109 | QRS188J-100YN | RESISTOR | 10Ω, 1/8W |
| | C1 | NEH10JM-107NZ | E CAPACITOR | 100$\mu$F |
| | C2 | NCF31CZ-104A | CAPACITOR | 0.1$\mu$F, 16V |
| | C3 | PU59867-100X | CHIP TRIM. CAP, OSC FREQ | 10PF |
| | C4 | NCB31EK-103A | CAPACITOR | 0.01$\mu$F, 25V |
| | C7 | NEH10JM-226NZ | E CAPACITOR | 22$\mu$F |
| | C8 | NCB31EK-103A | CAPACITOR | 0.01$\mu$F, 25V |
| | C10 | NCT07CH-220A | CAPACITOR | 22PF |
| | C11 | NEH10JM-226NZ | E CAPACITOR | 22$\mu$F |
| | C12 | NCB31EK-103A | CAPACITOR | 0.01$\mu$F, 25V |
| | C13 | NCB31EK-103A | CAPACITOR | 0.01$\mu$F, 25V |
| | C14 | NEH10JM-107NZ | E CAPACITOR | 100$\mu$F |
| | C15 | NCB31EK-103A | CAPACITOR | 0.01$\mu$F, 25V |
| | C16 | NEH11CM-106NZ | E CAPACITOR | 10$\mu$F |
| | C17 | NCB31EK-103A | CAPACITOR | 0.01$\mu$F, 25V |
| | C18 | NEH11CM-476NP | E CAPACITOR | 47$\mu$F |
| | C19 | NCB31EK-103A | CAPACITOR | 0.01$\mu$F, 25V |
| | C20 | NCB31EK-103A | CAPACITOR | 0.01$\mu$F, 25V |
| | C21 | NEH11CM-476NP | E CAPACITOR | 47$\mu$F |
| | C22 | NCB31EK-103A | CAPACITOR | 0.01$\mu$F, 25V |
| | C23 | NEH11EM-475NZ | E CAPACITOR | 4.7$\mu$F |
| | C24 | NCB31EK-103A | CAPACITOR | 0.01$\mu$F, 25V |
| | C25 | NCB31EK-103A | CAPACITOR | 0.01$\mu$F, 25V |
| | C26 | NEH11EM-475NZ | E CAPACITOR | 4.7$\mu$F |
| | C27 | NCB31EK-103A | CAPACITOR | 0.01$\mu$F, 25V |
| | C28 | NCB31EK-103A | CAPACITOR | 0.01$\mu$F, 25V |
| | C29 | NCB31EK-103A | CAPACITOR | 0.01$\mu$F, 25V |
| | C30 | NCB31EK-103A | CAPACITOR | 0.01$\mu$F, 25V |
| | C31 | NCB31EK-103A | CAPACITOR | 0.01$\mu$F, 25V |
| | C32 | NEH11CM-476NP | E CAPACITOR | 47$\mu$F |
| | C33 | NCB31EK-103A | CAPACITOR | 0.01$\mu$F, 25V |
| | C34 | NCB31EK-103A | CAPACITOR | 0.01$\mu$F, 25V |
| | C35 | QEE81CM-226 | TANTAL CAPACITOR | 22$\mu$F, 16V |
| | C36 | QCYA1EK-104 | CAPACITOR | 0.1$\mu$F, 25V |
| | C37 | QCYA1EK-104 | CAPACITOR | 0.1$\mu$F, 25V |
| | C38 | QCYA1EK-104 | CAPACITOR | 0.1$\mu$F, 25V |
| | C39 | PU59913-473 | CAPACITOR | 0.047$\mu$F |
| | C40 | PU59913-473 | CAPACITOR | 0.047$\mu$F |
| | C41 | QCYA1EK-104 | CAPACITOR | 0.1$\mu$F, 25V |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | C42 | QCY81EK-104 | CAPACITOR | 0.1µF, 25V |
| | C43 | QCYA1EK-104 | CAPACITOR | 0.1µF, 25V |
| | C44 | PU59758-105 | CAPACITOR | 1µF |
| | C46 | QCYA1EK-104 | CAPACITOR | 0.1µF, 25V |
| | C47 | QCYA1EK-104 | CAPACITOR | 0.1µF, 25V |
| | C48 | QCYA1EK-104 | CAPACITOR | 0.1µF, 25V |
| | C49 | QCYA1EK-104 | CAPACITOR | 0.1µF, 25V |
| | C50 | PU59758-105 | CAPACITOR | 1µF |
| | C51 | PU59758-105 | CAPACITOR | 1µF |
| | C52 | YU40265-1 | E CAPACITOR | |
| | or | QEZ0149-567 | E CAPACITOR | 560µF |
| | C53 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C54 | NEH11CM-106NZ | E CAPACITOR | 10µF |
| | C55 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C56 | NEH10JM-226NZ | E CAPACITOR | 22µF |
| | C57 | PU59758-105 | CAPACITOR | 1µF |
| | C58 | NEH10JM-226NZ | E CAPACITOR | 22µF |
| | C59 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C60 | NCT07CH-470A | CAPACITOR | 47PF |
| | C61 | NCT07CH-470A | CAPACITOR | 47PF |
| | C62 | PU59758-105 | CAPACITOR | 1µF |
| | C63 | NCT07CH-330A | CAPACITOR | 33PF |
| | C64 | NCT07CH-221A | CAPACITOR | 220PF |
| | C65 | QEF80GM-106 | TANTAL CAPACITOR | 10µF, 4.0V |
| | C66 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C67 | QEF81AM-106 | TANTAL CAPACITOR | 10µF, 10V |
| | C69 | NCT06CH-7R0A | CAPACITOR | 7PF |
| | C70 | NCF31CZ-104A | CAPACITOR | 0.1µF, 16V |
| | C71 | NCF31CZ-104A | CAPACITOR | 0.1µF, 16V |
| | C72 | NEH10JM-107NZ | E CAPACITOR | 100µF |
| | C73 | NCT06CH-820A | CAPACITOR | 82PF |
| | C75 | QCS11HJ-820 | CAPACITOR | 82PF, 50V |
| | L101 | QRS188J-0R0Y | RESISTOR | 0Ω, 1/8W |
| | L102 | YU41135-220KY | COIL | 22µH |
| | L103 | YU41135-220KY | COIL | 22µH |
| | L104 | YU41135-220KY | COIL | 22µH |
| | L105 | YU41135-220KY | COIL | 22µH |
| | L106 | YU41135-220KY | COIL | 22µH |
| | L108 | YU41135-220KY | COIL | 22µH |
| | L109 | YU41135-220KY | COIL | 22µH |
| | EQ101 | YU40391-3-R | EQUALIZER | |
| | LPF101 | YU40390-3-R | LOW PASS FILTER | |
| ⚠ | X101 | YU40389 | CRYSTAL RESONATOR | |
| | TP101 | YU40581-AY | CHIP TP, S/H-1 OUT | |
| | TP102 | YU40581-AY | CHIP TP, SSG CLOCK | |
| | TP103 | YU40581-AY | CHIP TP, SET UP VCC | |
| | TP104 | YU40581-AY | CHIP TP, B IN | |
| | TP105 | YU40581-AY | CHIP TP, R IN | |
| | CN104 | YU40101-20 | CAP HOUSING, (BOARD TO BOARD) | |
| | CN106 | YU40684-10 | CAP HOUSING, (BOARD TO BOARD) | |

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## 15. VIDEO BOARD ASSEMBLY ⟨22⟩

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|
| | PWBA | YB20210E-02 | VIDEO BOARD ASSY |
| | IC201 | MSM6831MS | IC |
| | IC202 | UPC2371GH | IC |
| | IC203 | MSM6985MS | IC |
| | IC204 | MSM6985MS | IC |
| | IC205 | MC8181D | IC |
| | IC206 | AN2276S | IC |
| | IC207 | TC4S71F | IC |
| | IC208 | TC4S69F | IC |
| | IC209 | TC4S81F | IC |
| | IC210 | TC4S81F | IC |
| | IC211 | H8D7051A | IC |
| | Q201 | 2SA1532(BC) | TRANSISTOR |
| | or | 2SA1576(QR) | TRANSISTOR |
| | Q202 | 2SC3931(CD) | TRANSISTOR |
| | Q203 | 2SA1532(BC) | TRANSISTOR |
| | or | 2SA1576(QR) | TRANSISTOR |
| | Q204 | 2SC3936(BC) | TRANSISTOR |
| | or | 2SC4098(PQ) | TRANSISTOR |
| | Q205 | 2SC3936(BC) | TRANSISTOR |
| | or | 2SC4098(PQ) | TRANSISTOR |
| | Q206 | 2SA1532(BC) | TRANSISTOR |
| | or | 2SA1576(QR) | TRANSISTOR |
| | Q207 | 2SC3936(BC) | TRANSISTOR |
| | or | 2SC4098(PQ) | TRANSISTOR |
| | Q208 | 2SA1532(BC) | TRANSISTOR |
| | or | 2SA1576(QR) | TRANSISTOR |
| | Q209 | 2SC3936(BC) | TRANSISTOR |
| | or | 2SC4098(PQ) | TRANSISTOR |
| | Q210 | 2SC3936(BC) | TRANSISTOR |
| | or | 2SC4098(PQ) | TRANSISTOR |
| | Q211 | 2SC3936(BC) | TRANSISTOR |
| | or | 2SC4098(PQ) | TRANSISTOR |
| | Q212 | 2SC3936(BC) | TRANSISTOR |
| | or | 2SC4177(56) | TRANSISTOR |
| | or | 2SC4098(PQ) | TRANSISTOR |
| | Q213 | 2SC3936(BC) | TRANSISTOR |
| | or | 2SC4098(PQ) | TRANSISTOR |
| | or | 2SC4177(56) | TRANSISTOR |
| | Q214 | 2SC3936(BC) | TRANSISTOR |
| | or | 2SC4177(56) | TRANSISTOR |
| | or | 2SC4098(PQ) | TRANSISTOR |
| | Q216 | 2SC3936(BC) | TRANSISTOR |
| | or | 2SC4098(PQ) | TRANSISTOR |
| | or | 2SC4177(56) | TRANSISTOR |
| | Q217 | 2SC3936(BC) | TRANSISTOR |
| | or | 2SC4098(PQ) | TRANSISTOR |
| | or | 2SC4177(56) | TRANSISTOR |
| | Q218 | 2SA1532(BC) | TRANSISTOR |
| | or | 2SA1576(QR) | TRANSISTOR |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | Q219 | 2SC3936(BC) | TRANSISTOR | |
| | | or 2SC4098(PQ) | TRANSISTOR | |
| | | or 2SC4177(56) | TRANSISTOR | |
| | Q220 | 2SC3936(BC) | TRANSISTOR | |
| | | or 2SC4098(PQ) | TRANSISTOR | |
| | | or 2SC4177(56) | TRANSISTOR | |
| | D202 | MA141WA | DIODE | |
| | D203 | MA141WK | DIODE | |
| | R201 | NRSA63J-122N | RESISTOR | 1.2KΩ, 1/16W |
| | R202 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R203 | NRSA63J-271N | RESISTOR | 270Ω, 1/16W |
| | R204 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R205 | NRSA63J-182N | RESISTOR | 1.8KΩ, 1/16W |
| | R206 | NRSA63J-472N | RESISTOR | 4.7KΩ, 1/16W |
| | R207 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R208 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R209 | NRSA63J-681N | RESISTOR | 680Ω, 1/16W |
| | R210 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R211 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R212 | NRSA63J-391N | RESISTOR | 390Ω, 1/16W |
| | R213 | NVP1301-103N | V RESISTOR, COLOR DIFF BALANCE | 10KΩ |
| | R214 | NRSA63J-152N | RESISTOR | 1.5KΩ, 1/16W |
| | R215 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R216 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R217 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R218 | NRSA63J-272N | RESISTOR | 2.7KΩ, 1/16W |
| | R219 | NRSA63J-682N | RESISTOR | 6.8KΩ, 1/16W |
| | R220 | NRSA63J-152N | RESISTOR | 1.5KΩ, 1/16W |
| | R221 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R222 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R223 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R224 | NVP1301-223N | V RESISTOR, COLOR D OFFSET | 22KΩ |
| | R225 | NRSA63J-123N | RESISTOR | 12KΩ, 1/16W |
| | R226 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R227 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R228 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R229 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R230 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R232 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R233 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R234 | NRSA63G-473N | RESISTOR | 47KΩ, 1/16W |
| | R235 | NRSA63J-393N | RESISTOR | 39KΩ, 1/16W |
| | R236 | NRSA63J-183N | RESISTOR | 18KΩ, 1/16W |
| | R237 | NRSA63J-183N | RESISTOR | 18KΩ, 1/16W |
| | R238 | NRSA63J-472N | RESISTOR | 4.7KΩ, 1/16W |
| | R239 | NRSA63G-393N | RESISTOR | 39KΩ, 1/16W |
| | R240 | NRSA63J-183N | RESISTOR | 18KΩ, 1/16W |
| | R241 | NRSA63J-513N | RESISTOR | 51KΩ, 1/16W |
| | R242 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R243 | NVP1301-103N | V RESISTOR, Y LEVEL | 10KΩ |
| | R244 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R245 | NRSA63J-153N | RESISTOR | 15KΩ, 1/16W |
| | R246 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R247 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | R248 | NRSA63J-123N | RESISTOR | 12KΩ, 1/16W |
| | R249 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R250 | NRSA63J-183N | RESISTOR | 18KΩ, 1/16W |
| | R251 | NRSA63J-123N | RESISTOR | 12KΩ, 1/16W |
| | R252 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R253 | NRSA63J-683N | RESISTOR | 68KΩ, 1/16W |
| | R255 | NRSA63J-682N | RESISTOR | 6.8KΩ, 1/16W |
| | R256 | NRSA63J-182N | RESISTOR | 1.8KΩ, 1/16W |
| | R257 | NRSA63J-393N | RESISTOR | 39KΩ, 1/16W |
| | R258 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R259 | NRSA63J-183N | RESISTOR | 18KΩ, 1/16W |
| | R260 | NRSA63J-475N | RESISTOR | 4.7MΩ, 1/16W |
| | R261 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R262 | NVP1301-103N | V RESISTOR, B-Y LEVEL | 10KΩ |
| | R263 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R264 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R265 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R266 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R267 | NRSA63J-272N | RESISTOR | 2.7KΩ, 1/16W |
| | R268 | NRSA63J-272N | RESISTOR | 2.7KΩ, 1/16W |
| | R269 | NRSA63J-272N | RESISTOR | 2.7KΩ, 1/16W |
| | R270 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R272 | NRSA63J-681N | RESISTOR | 680Ω, 1/16W |
| | R273 | NRSA63J-681N | RESISTOR | 680Ω, 1/16W |
| | R274 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R275 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R276 | NRSA63J-123N | RESISTOR | 12KΩ, 1/16W |
| | R277 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R278 | NVP1301-223N | V RESISTOR, WHITE CLIP LEVEL | 22KΩ |
| | R279 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R280 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R281 | NVP1301-103N | V RESISTOR, SYNC LEVEL | 10KΩ |
| | R282 | NRSA63J-822N | RESISTOR | 8.2KΩ, 1/16W |
| | R283 | NRSA63J-271N | RESISTOR | 270Ω, 1/16W |
| | R284 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R285 | NRSA63J-682N | RESISTOR | 6.8KΩ, 1/16W |
| | R286 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R290 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R291 | NVP1301-223N | V RESISTOR, BURST BAL | 22KΩ |
| | R293 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R295 | NRSA63J-100N | RESISTOR | 10Ω, 1/16W |
| | R296 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R297 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R298 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R299 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R451 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R452 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R453 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R454 | NRSA63J-751N | RESISTOR | 750Ω, 1/16W |
| | R455 | YU40808-103X | V RESISTOR, COLOR LEVEL | |
| | R456 | NVP1301-103N | V RESISTOR, BURST LEVEL | 10KΩ |
| | R457 | NVP1301-223N | V RESISTOR, B ENCODER BAL-1 | 22KΩ |
| | R458 | NVP1301-223N | V RESISTOR, R ENCODER BAL-1 | 22KΩ |
| | R459 | NVP1301-222N | V RESISTOR, BURST PHASE | 2.2KΩ |
| | R460 | NRSA63J-272N | RESISTOR | 2.7KΩ, 1/16W |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | R461 | NVP1301-222N | V RESISTOR, 1H DELAYED SIG LEVEL | 2.2KΩ |
| | R462 | NRSA63J-100N | RESISTOR | 10Ω, 1/16W |
| | R463 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R464 | NRSA63J-331N | RESISTOR | 330Ω, 1/16W |
| | R465 | NRSA63J-472N | RESISTOR | 4.7KΩ, 1/16W |
| | R466 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R467 | NRSA63J-821N | RESISTOR | 820Ω, 1/16W |
| | R469 | NRSA63J-123N | RESISTOR | 12KΩ, 1/16W |
| | R470 | NVP1301-472N | V RESISTOR, VITC LEVEL | 4.7KΩ |
| | R471 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R472 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R473 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R474 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R475 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R476 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R477 | NVP1301-223N | V RESISTOR, R ENCODER BAL-2 | 22KΩ |
| | R478 | NVP1301-223N | V RESISTOR, B ENCODER BAL-2 | 22KΩ |
| | R479 | NVP1301-103N | V RESISTOR, RED PHASE | 10KΩ |
| | R480 | NRSA63J-821N | RESISTOR | 820Ω, 1/16W |
| | R481 | NRSA63J-821N | RESISTOR | 820Ω, 1/16W |
| | R482 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R483 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | C201 | QEF81AM-475 | TANTAL CAPACITOR | 4.7µF, 10V |
| | C202 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C203 | PU59913-473 | CAPACITOR | 0.047µF |
| | or | NCR21CM-473A | CAPACITOR | 0.047µF, 16V |
| | C204 | QEF81AM-475 | TANTAL CAPACITOR | 4.7µF, 10V |
| | C205 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C206 | NEH11CM-106NZ | E CAPACITOR | 10µF |
| | C207 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C208 | QEF81AM-475 | TANTAL CAPACITOR | 4.7µF, 10V |
| | C209 | QEF81VM-334 | TANTAL CAPACITOR | 0.33µF, 35V |
| | C210 | QEF81VM-334 | TANTAL CAPACITOR | 0.33µF, 35V |
| | C211 | QEF81CM-475 | TANTAL CAPACITOR | 4.7µF, 16V |
| | C212 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C213 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C214 | QCFA1EZ-104 | CAPACITOR | 0.1µF, 25V |
| | C215 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C216 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C217 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C218 | QEF81AM-475 | TANTAL CAPACITOR | 4.7µF, 10V |
| | C219 | NEH10JM-226NZ | E CAPACITOR | 22µF |
| | C220 | NEH11CM-106NZ | E CAPACITOR | 10µF |
| | C221 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C222 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C223 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C224 | QEE81AM-475 | E CAPACITOR | 4.7µF, 10V |
| | C225 | QCFA1EZ-104 | CAPACITOR | 0.1µF, 25V |
| | C226 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C227 | PU59913-473 | CAPACITOR | 0.047µF |
| | or | NCR21CM-473A | CAPACITOR | 0.047µF, 16V |
| | C228 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C229 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C230 | PU59913-473 | CAPACITOR | 0.047µF |
| | or | NCR21CM-473A | CAPACITOR | 0.047µF, 16V |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | C231 | PU59913-473 | CAPACITOR | 0.047µF |
| | or | NCR21CM-473A | CAPACITOR | 0.047µF, 16V |
| | C232 | PU59913-473 | CAPACITOR | 0.047µF |
| | or | NCR21CM-473A | CAPACITOR | 0.047µF, 16V |
| | C233 | PU59913-473 | CAPACITOR | 0.047µF |
| | or | NCR21CM-473A | CAPACITOR | 0.047µF, 16V |
| | C234 | NCF31CZ-104A | CAPACITOR | 0.1µF, 16V |
| | C235 | PU59913-473 | CAPACITOR | 0.047µF |
| | or | NCR21CM-473A | CAPACITOR | 0.047µF, 16V |
| | C236 | PU59758-105 | CAPACITOR | 1µF |
| | C237 | NEH11CM-106NZ | E CAPACITOR | 10µF |
| | C238 | NCT07CH-330A | CAPACITOR | 33PF |
| | C239 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C240 | QEF81AM-106 | TANTAL CAPACITOR | 10µF, 10V |
| | C241 | QCFA1EZ-104 | CAPACITOR | 0.1µF, 25V |
| | C242 | PU59913-473 | CAPACITOR | 0.047µF |
| | or | NCR21CM-473A | CAPACITOR | 0.047µF, 16V |
| | C243 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C244 | NCT07CH-470A | CAPACITOR | 47PF |
| | C245 | NCT07CH-560A | CAPACITOR | 56PF |
| | C246 | NCT07CH-560A | CAPACITOR | 56PF |
| | C247 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C248 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C249 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C250 | NCR21CM-473A | CAPACITOR | 0.047µF, 16V |
| | or | PU59913-473 | CAPACITOR | 0.047µF |
| | C251 | QEF80GM-226 | TANTAL CAPACITOR | 22µF, 4.0V |
| | C252 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C253 | NCR21CM-473A | CAPACITOR | 0.047µF, 16V |
| | or | PU59913-473 | CAPACITOR | 0.047µF |
| | C254 | NCR21CM-473A | CAPACITOR | 0.047µF, 16V |
| | or | PU59913-473 | CAPACITOR | 0.047µF |
| | C255 | QEJ41CM-476 | TANTAL CAPACITOR | 47µF, 16V |
| | C256 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C257 | QEF81EM-155 | TANTAL CAPACITOR | 1.5µF, 25V |
| | C260 | NCR21CM-473A | CAPACITOR | 0.047µF, 16V |
| | or | PU59913-473 | CAPACITOR | 0.047µF |
| | C261 | NEH10JM-226NZ | E CAPACITOR | 22µF |
| | C262 | NCR21CM-473A | CAPACITOR | 0.047µF, 16V |
| | or | PU59913-473 | CAPACITOR | 0.047µF |
| | C263 | QEF81CM-226 | TANTAL CAPACITOR | 22µF, 16V |
| | C265 | NCF31CZ-104A | CAPACITOR | 0.1µF, 16V |
| | C266 | PU59758-105 | CAPACITOR | 1µF |
| | C267 | PU59758-105 | CAPACITOR | 1µF |
| | C268 | QCFA1EZ-104 | CAPACITOR | 0.1µF, 25V |
| | C269 | QCFA1EZ-104 | CAPACITOR | 0.1µF, 25V |
| | C270 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | C271 | NCT07CH-101A | CAPACITOR | 100PF |
| | C272 | NCT07CH-101A | CAPACITOR | 100PF |
| | C273 | NCB31EK-103A | CAPACITOR | 0.01µF, 25V |
| | L201 | YU41135-220KY | COIL | 22µH |
| | L202 | YU41135-220KY | COIL | 22µH |
| | L203 | YU41135-220KY | COIL | 22µH |
| | L204 | YU41135-220KY | COIL | 22µH |
| | L205 | YU41135-220KY | COIL | 22µH |
| | L207 | YU41135-220KY | COIL | 22µH |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | L208 | YU41135-220KY | COIL | 22$\mu$H |
| | EQ201 | YU40324 | EQUALIZER | |
| | EQ202 | YU40324 | EQUALIZER | |
| | LPF201 | YU40444 | LOW PASS FILTER | |
| | or | YU40600 | LOW PASS FILTER | |
| | LPF202 | YU40443 | LOW PASS FILTER | |
| | LPF203 | YU40444 | LOW PASS FILTER | |
| | or | YU40600 | LOW PASS FILTER | |
| | LPF204 | YU40392 | LOW PASS FILTER | |
| | LPF205 | YU40392 | LOW PASS FILTER | |
| | BPF201 | YU40393-2-P | BAND PASS FILTER | |
| | or | YU40599-P | BAND PASS FILTER | |
| | DL201 | YU40128-2-P | DELAY LINE | |
| | TRAP201 | YU40487 | 4.43MHZ TRAP | |
| | TP201 | YU40581-AY | CHIP TP, Y OUT | |
| | TP202 | YU40581-AY | CHIP TP, C OUT | |
| | TP203 | YU40581-AY | CHIP TP, V EDGE SIG OUT | |
| | TP204 | YU40581-AY | CHIP TP, GND | |
| | CN204 | YU40105-22 | CAP HOUSING, (BOARD TO BOARD) | |
| | CN206 | YU40650-8 | CAP HOUSING, (BOARD TO BOARD) | |

### — EQ BOARD ASSEMBLY —

| | | | | |
|---|---|---|---|---|
| | PWBA | YB20272A-C | EQ BOARD ASSY | |
| | R500 | NRSA63J-102 | RESISTER | 1KΩ, 1/16W |
| | EQ203 | YU40637 | EQUALIZER | |
| | SPC1 | PU59915-106 | SPACER | |

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## 16. VIDEO SUB2 BOARD ASSEMBLY ⟨36⟩

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | PWBA | YB20269A | VIDEO SUB2 BOARD ASSY | |
| | Q231 | 2SC3936(BC) | TRANSISTOR | |
| | D211 | MA704 | DIODE | |
| | D212 | MA704 | DIODE | |
| | R491 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R492 | NRSA63J-682N | RESISTOR | 6.8KΩ, 1/16W |
| | R493 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R494 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R495 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R496 | NRSA63J-272N | RESISTOR | 2.7KΩ, 1/16W |
| | R497 | NRSA63J-182N | RESISTOR | 1.8KΩ, 1/16W |
| | C281 | QEF81AM-106 | TANTAL CAPACITOR | 10$\mu$F, 10V |
| | C282 | NCF31CZ-104A | CAPACITOR | 0.1$\mu$F, 16V |
| | C283 | NCF31CZ-104A | CAPACITOR | 0.1$\mu$F, 16V |
| | C284 | NCF31CZ-104A | CAPACITOR | 0.1$\mu$F, 16V |

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## 17. CPU BOARD ASSEMBLY ⟨23⟩

| | | | | |
|---|---|---|---|---|
| | PWBA | YB20182E-04 | CPU BOARD ASSY | |
| | IC301 | M37100M8-492FP | IC | |
| | IC302 | M37450M2-152FP | IC | |
| | IC303 | S-3500A2 | IC | |
| | IC304 | UPC358G2 | IC | |
| | IC305 | S-8053ANO | IC | |
| | IC306 | S-81215AG | IC | |
| | IC307 | UPC358G2 | IC | |
| | IC308 | TC7S04F | IC | |
| | IC311 | TC74HC04AF | IC | |
| | IC312 | TC74HC14AF | IC | |
| | IC313 | TC4S66F | IC | |
| | IC314 | TC4S66F | IC | |
| | IC315 | UPC358G2 | IC | |
| | Q301 | DTA124EU | TRANSISTOR | |
| | Q302 | DTC124EU | TRANSISTOR | |
| | Q303 | DTC124EU | TRANSISTOR | |
| ⚠ | D302 | MA704 | DIODE | |
| | D303 | RD7.5M-T2B2 | ZENER DIODE | |
| | D304 | RD7.5M-T2B2 | ZENER DIODE | |
| | D305 | RD7.5M-T2B2 | ZENER DIODE | |
| | D306 | RD7.5M-T2B2 | ZENER DIODE | |
| | D307 | 1SS133 | DIODE | |
| | R301 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R302 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R303 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R304 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R305 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R306 | NRSA63J-105N | RESISTOR | 1MΩ, 1/16W |
| | R307 | NVP1301-153N | V RESISTOR, IND OSC | 15KΩ |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | R308 | NRSA63J-151N | RESISTOR | 150Ω, 1/16W |
| | R309 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R310 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R311 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R312 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R313 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R314 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R315 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R317 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R319 | NRSA63J-223N | RESISTOR | 2.2KΩ, 1/16W |
| | R320 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R322 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R323 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R324 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R326 | NVP1301-472N | V RESISTOR, 5V | 4.7KΩ |
| | R330 | NVP1301-102N | V RESISTOR, IRIS LOCK | 1KΩ |
| | R331 | NRSA63J-104N | RESISTOR | 100KΩ, 1/16W |
| | R332 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R333 | NRSA63G-103N | RESISTOR | 10KΩ, 1/16W |
| | R334 | NRSA63G-103N | RESISTOR | 10KΩ, 1/16W |
| | R335 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R336 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R337 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R338 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R339 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R340 | NRSA63J-824N | RESISTOR | 820KΩ, 1/16W |
| | R341 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R342 | NRSA63J-682N | RESISTOR | 6.8KΩ, 1/16W |
| | R343 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R344 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R345 | NRSA63J-394N | RESISTOR | 390KΩ, 1/16W |
| | R346 | NRSA63J-394N | RESISTOR | 390KΩ, 1/16W |
| | R347 | NRSA63J-471N | RESISTOR | 470Ω, 1/16W |
| ⚠ | R348 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R349 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R351 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R352 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R353 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R354 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R355 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R356 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R357 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R358 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R359 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R360 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R361 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R362 | NRSA63J-224N | RESISTOR | 220KΩ, 1/16W |
| | R363 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R364 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R365 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R366 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R367 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R368 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R369 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R370 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | R371 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R373 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R375 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R376 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R378 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R379 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R384 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R387 | NRSA63J-393N | RESISTOR | 39KΩ, 1/16W |
| | R388 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R391 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R392 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R393 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R394 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R398 | NRSA63J-272N | RESISTOR | 2.7KΩ, 1/16W |
| | R399 | ERT-D2ZGL601S | RESISTOR | |
| | B302 | NRSA63J-0R0A | RESISTOR | |
| | C301 | NEH11CM-476NP | E CAPACITOR | 47μF |
| | C302 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C303 | NEH10JM-107NP | E CAPACITOR | 100μF |
| | C304 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C305 | NEH10JM-107NP | E CAPACITOR | 100μF |
| | C306 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C307 | NCT07CH-100A | CAPACITOR | 10PF |
| | C308 | NCT07CH-150A | CAPACITOR | 15PF |
| | C309 | NCT06CH-300A | CAPACITOR | 30PF |
| | C310 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C311 | QEF80JM-225 | TANTAL CAPACITOR | 2.2μF, 6.3V |
| | C312 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C313 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C314 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C315 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C318 | NCF31CZ-104A | CAPACITOR | 0.1μF, 16V |
| | C319 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C320 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C322 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C324 | QEF80JM-225 | TANTAL CAPACITOR | 2.2μF, 6.3V |
| | C325 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C326 | YU40265-5 | E CAPACITOR | |
| | L301 | YU41135-220KY | COIL | 22μH |
| | L302 | YU41135-220KY | COIL | 22μH |
| | L303 | YU41135-220KY | COIL | 22μH |
| ⚠ | X301 | YU40560 | CRYSTAL RESONATOR | |
| ⚠ | X302 | YU40141 | CRYSTAL RESONATOR | |
| | TP301 | YU40581-AY | CHIP TP, GND | |
| | TP302 | YU40581-AY | CHIP TP, 5V OUT | |
| | TP303 | YU40581-AY | CHIP TP, IRIS OUT | |
| | CN300 | YU40095-6 | CAP HOUSING | |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | CN303 | YU40096-8 | CAP HOUSING | |
| | CN306 | YU40650-30 | CAP HOUSING | |
| | CN307 | YU40096-7 | CAP HOUSING | |
| | CN308 | YU40108-22 | CAP HOUSING | |

### — VD DELAY BOARD ASSEMBLY —

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | PWBA | YB20259A | VD DELAY BOARD ASSY | |
| | IC316 | TC74HC02AF | IC | |
| | IC317 | TC74HC163AF | IC | |
| | C327 | NCF31CZ-104A | CAPACITOR | 0.1μF, 16V |

## 18. BOTTOM BOARD ASSEMBLY ⟨24⟩

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|
| | PWBA | YB20183E | BOTTOM BOARD ASSY |
| | C401 | YU40265-5 | E CAPACITOR |
| | DD1 | YU40972-2 | DC-DC CONVERTER |
| | SLD1 | YQ41306 | SHEET (L.P) |
| | SPC1 | PU59915-107 | SPACER |
| | CN401 | YU40105-20 | CAP HOUSING, (BOARD TO BOARD) |
| | CN402 | YU40101-22 | CAP HOUSING, (BOARD TO BOARD) |
| | CN404 | YU40108-7 | CAP HOUSING |
| | CN405 | YU40101-18 | CAP HOUSING, (BOARD TO BOARD) |
| | CN406 | YU40105-12 | CAP HOUSING, (BOARD TO BOARD) |
| ⚠ | CP401 | ICP-F20 | CIRCUIT PROTECTOR |
| ⚠ | CP402 | ICP-F10 | CIRCUIT PROTECTOR |

### — BOTTOM SUB BOARD ASSEMBLY —

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|
| | PWBA | YB20246A-C | BOTTOM SUB BOARD ASSY |
| | IC401 | BU4011BF | IC |
| | B401 | QRSA08J-0R0Y | RESISTOR |
| | B402 | QRSA08J-0R0Y | RESISTOR |
| | B403 | QRSA08J-0R0Y | RESISTOR |

## 19. FAW 1 BOARD ASSEMBLY ⟨25⟩

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | PWBA | YB20184A-02 | FAW 1 BOARD ASSY | |
| | IC501 | HA11899MP | IC | |
| | IC502 | BA10339F | IC | |
| | IC503 | BA10339F | IC | |
| | IC504 | BU4011BF | IC | |
| | Q501 | 2SC3936(BC) | TRANSISTOR | |
| | Q502 | 2SC3936(BC) | TRANSISTOR | |
| | Q503 | 2SC4081(QR) | TRANSISTOR | |
| | Q504 | 2SC3936(BC) | TRANSISTOR | |
| | Q505 | 2SC3936(BC) | TRANSISTOR | |
| | Q506 | 2SC4081(QR) | TRANSISTOR | |
| | Q507 | 2SC3936(BC) | TRANSISTOR | |
| | Q508 | 2SC4081(QR) | TRANSISTOR | |
| | Q509 | 2SC3936(BC) | TRANSISTOR | |
| | Q510 | 2SC4081(QR) | TRANSISTOR | |
| | Q511 | 2SC4081(QR) | TRANSISTOR | |
| | Q512 | 2SC4081(QR) | TRANSISTOR | |
| | Q513 | 2SC4081(QR) | TRANSISTOR | |
| | Q514 | 2SC4081(QR) | TRANSISTOR | |
| | Q515 | 2SK665 | FE TRANSISTOR | |
| | Q516 | 2SC3936(BC) | TRANSISTOR | |
| | Q517 | 2SK665 | FE TRANSISTOR | |
| | Q518 | 2SC4081(QR) | TRANSISTOR | |
| | Q520 | 2SK117 | FE TRANSISTOR | |
| | D501 | MA141A | DIODE | |
| | D502 | MA141WA | DIODE | |
| | D503 | DAN202U | DIODE | |
| | D504 | MA141WA | DIODE | |
| | R501 | NRSA63J-182N | RESISTOR | 1.8KΩ, 1/16W |
| | R502 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R503 | NRSA63J-562N | RESISTOR | 5.6KΩ, 1/16W |
| | R504 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R505 | NRSA63J-182N | RESISTOR | 1.8KΩ, 1/16W |
| | R506 | NRSA63J-562N | RESISTOR | 5.6KΩ, 1/16W |
| | R507 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R508 | NRSA63J-182N | RESISTOR | 1.8KΩ, 1/16W |
| | R509 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R510 | NRSA63J-562N | RESISTOR | 5.6KΩ, 1/16W |
| | R511 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R512 | NRSA63J-182N | RESISTOR | 1.8KΩ, 1/16W |
| | R513 | NRSA63J-562N | RESISTOR | 5.6KΩ, 1/16W |
| | R514 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R515 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R516 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R517 | NRSA63J-182N | RESISTOR | 1.8KΩ, 1/16W |
| | R518 | NRSA63J-562N | RESISTOR | 5.6KΩ, 1/16W |
| | R519 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | R520 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R521 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R522 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R523 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R524 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R525 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R526 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R527 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R528 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R529 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R530 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R531 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R532 | NRSA63J-104N | RESISTOR | 100KΩ, 1/16W |
| | R533 | NRSA63J-104N | RESISTOR | 100KΩ, 1/16W |
| | R536 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R537 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R538 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R539 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R540 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R541 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R542 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R543 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R544 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R545 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R546 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R547 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R548 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R549 | NVP1301-473N | V RESISTOR, B-Y LEVEL | 47KΩ |
| | R550 | NVP1301-473N | V RESISTOR, R-Y LEVEL | 47KΩ |
| | R551 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R552 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R553 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R554 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R555 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R558 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R559 | NRSA63J-104N | RESISTOR | 100KΩ, 1/16W |
| | R569 | NRSA63J-562N | RESISTOR | 5.6KΩ, 1/16W |
| | R570 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R571 | NRSA63J-123N | RESISTOR | 12KΩ, 1/16W |
| | R572 | NRSA63J-562N | RESISTOR | 5.6KΩ, 1/16W |
| | R573 | NRSA63J-104N | RESISTOR | 100KΩ, 1/16W |
| | R574 | NRSA63J-562N | RESISTOR | 5.6KΩ, 1/16W |
| | R575 | QRD161J-105 | RESISTOR | 1MΩ, 1/6W |
| | C501 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C502 | NEH11CM-106NZ | E CAPACITOR | 10μF |
| | C503 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C504 | NEH10JM-226NZ | E CAPACITOR | 22μF |
| | C507 | PU59913-473K | CAPACITOR | 0.047μF |
| | C508 | PU59913-473K | CAPACITOR | 0.047μF |
| | C509 | PU59913-473K | CAPACITOR | 0.047μF |
| | C510 | QEF81CM-105 | TANTAL CAPACITOR | 1μF, 16V |
| | C511 | QEF81CM-105 | TANTAL CAPACITOR | 1μF, 16V |
| | C512 | QEF81CM-105 | TANTAL CAPACITOR | 1μF, 16V |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | C513 | QEF81CM-105 | TANTAL CAPACITOR | 1μF, 16V |
| | C516 | QEF80JM-226 | TANTAL CAPACITOR | 22μF, 6.3V |
| | C517 | NCB31HK-471A | CAPACITOR | 470PF, 50V |
| | C518 | NEH11HM-105NZ | E CAPACITOR | 1μF |
| | C519 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C520 | NEH10GM-476NZ | E CAPACITOR | 47μF |
| | C521 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C522 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C523 | NEH10JM-226NZ | E CAPACITOR | 22μF |
| | C527 | PU59913-473K | CAPACITOR | 0.047μF |
| | C528 | PU59913-473K | CAPACITOR | 0.047μF |
| | C529 | PU59913-473K | CAPACITOR | 0.047μF |
| | L501 | YU40248-220KY | COIL | 22μH |
| | L502 | PU58201-220K | COIL | 22μH |
| | TP501 | YU40581-AY | CHIP TP, B-Y | |
| | TP502 | YU40581-AY | CHIP TP, R-Y | |
| | CN504 | YU40105-18 | CAP HOUSING, (BOARD TO BOARD) | |
| | CN511 | YU40108-10 | CAP HOUSING | |
| | CN512 | YU40095-5 | CAP HOUSING | |

### — FAW 2 BOARD ASSEMBLY —

| | | | | |
|---|---|---|---|---|
| | PWBA | YB20261A | FAW 2 BOARD ASSY | |
| | IC751 | BU4052BF | IC | |
| | IC752 | BA10324F | IC | |
| | or | XRA10324F | IC | |
| | IC753 | BA10324F | IC | |
| | or | XRA10324F | IC | |
| | IC754 | BU4053BF | IC | |
| | IC755 | BA10324F | IC | |
| | or | XRA10324F | IC | |
| | D751 | MA141WA | DIODE | |
| | D752 | DAP202U | DIODE | |
| | R751 | NRSA63J-123N | RESISTOR | 12KΩ, 1/16W |
| | R752 | QRSA08J-822YN | RESISTOR | 8.2KΩ, 1/10W |
| | R753 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R754 | NRSA63J-562N | RESISTOR | 5.6KΩ, 1/16W |
| | R755 | NRSA63J-682N | RESISTOR | 6.8KΩ, 1/16W |
| | R756 | NRSA63J-682N | RESISTOR | 6.8KΩ, 1/16W |
| | R757 | NRSA63J-562N | RESISTOR | 5.6KΩ, 1/16W |
| | R758 | QRSA08J-822YN | RESISTOR | 8.2KΩ, 1/10W |
| | R759 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R760 | NVP1301-104N | V RESISTOR, PRESET OUTDOOR R | 100KΩ |
| | R761 | NVP1301-104N | V RESISTOR, PRESET OUTDOOR B | 100KΩ |
| | R764 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | R765 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R766 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R767 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R768 | NVP1301-103N | V RESISTOR, PRESET INDOOR R | 10KΩ |
| | R769 | NVP1301-103N | V RESISTOR, PRESET INDOOR B | 10KΩ |
| | R770 | NVP1301-104N | V RESISTOR, R INDOOR LIMITER | 100KΩ |
| | R771 | NVP1301-104N | V RESISTOR, B INDOOR LIMITER | 100KΩ |
| | R774 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R775 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | R776 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R777 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R778 | NVP1301-103N | V RESISTOR, R OUTDOOR LIMITER | 10KΩ |
| | R779 | NVP1301-103N | V RESISTOR, B OUTDOOR LIMITER | 10KΩ |
| | R780 | NRSA63J-153N | RESISTOR | 15KΩ, 1/16W |
| | R781 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R782 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | C751 | NCF31CZ-104A | CAPACITOR | 0.1μF, 16V |
| | C752 | QEF80JM-225 | E CAPACITOR | 2.2μF, 6.3V |
| | C753 | QEF80JM-225 | E CAPACITOR | 2.2μF, 6.3V |
| | SPC1 | PU59915-107 | SPACER | |
| | WR1 | YU41346 | FLAT WIRE | |
| | CN751 | YU40179-110 | CAP HOUSING | |

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## 20. THD BOARD ASSEMBLY ⟨26⟩

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | PWBA | YB20185F-01 | THD BOARD ASSY | |
| | IC601 | AN2570FA | IC | |
| | or | AN2570FAP | IC | |
| | IC602 | UPD4053BG | IC | |
| | or | BU4053BF | IC | |
| | IC603 | M54641FP | IC | |
| | IC901 | UPC324G2 | IC | |
| | IC902 | TC4S66F | IC | |
| | Q601 | 2SB1218(QR) | TRANSISTOR | |
| | Q602 | DTC124EU | TRANSISTOR | |
| | Q603 | DTA124EU | TRANSISTOR | |
| | Q901 | DTC124EU | TRANSISTOR | |
| | D601 | MA141WK | DIODE | |
| | D602 | MA141WK | DIODE | |
| | R602 | NRSA63J-153N | RESISTOR | 15KΩ, 1/16W |
| | R603 | NRSA63J-332N | RESISTOR | 3.3KΩ, 1/16W |
| | R604 | NRSA63J-562N | RESISTOR | 5.6KΩ, 1/16W |
| | R605 | NRSA63J-123N | RESISTOR | 12KΩ, 1/16W |
| | R606 | NRSA63J-333N | RESISTOR | 33KΩ, 1/16W |
| | R607 | NVP1301-103N | V RESISTOR, IRIS | 10KΩ |
| | R608 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R611 | NRSA63J-334N | RESISTOR | 330KΩ, 1/16W |
| | R612 | NVP1301-224N | V RESISTOR, HOLE-L | 220KΩ |
| | R613 | NVP1301-332N | V RESISTOR, HOLE-H | 3.3KΩ |
| | R614 | NRSA63J-104N | RESISTOR | 100KΩ, 1/16W |
| | R615 | NRSA63J-472N | RESISTOR | 4.7KΩ, 1/16W |
| | R616 | NRSA63J-472N | RESISTOR | 4.7KΩ, 1/16W |
| | R617 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R618 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R619 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R622 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R624 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R625 | NRSA63J-104N | RESISTOR | 100KΩ, 1/16W |
| | R631 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R633 | NRSA63J-472N | RESISTOR | 4.7KΩ, 1/16W |
| | R634 | NRSA63J-472N | RESISTOR | 4.7KΩ, 1/16W |
| | R635 | NRSA63J-153N | RESISTOR | 15KΩ, 1/16W |
| | R636 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R637 | NRSA63J-101N | RESISTOR | 100Ω, 1/16W |
| | R638 | NRSA63J-101N | RESISTOR | 100Ω, 1/16W |
| | R639 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R640 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R643 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R644 | NRSA63J-222N | RESISTOR | 2.2KΩ, 1/16W |
| | R645 | NRSA63J-123N | RESISTOR | 12KΩ, 1/16W |
| | R646 | NRSA63J-822N | RESISTOR | 8.2KΩ, 1/16W |
| | R647 | NRSA63J-102N | RESISTOR | 1KΩ, 1/16W |
| | R648 | NRSA63J-224N | RESISTOR | 220KΩ, 1/16W |
| | R649 | NRSA63J-0R0A | RESISTOR | 0Ω, 1/16W |
| | R650 | NVP1301-104N | V RESISTOR, IRIS FINE | 100KΩ |
| | R901 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R902 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R903 | NRSA63J-103N | RESISTOR | 10KΩ, 1/16W |
| | R904 | NRSA63J-223N | RESISTOR | 22KΩ, 1/16W |
| | R905 | NRSA63J-123N | RESISTOR | 12KΩ, 1/16W |
| | R906 | NRSA63J-123N | RESISTOR | 12KΩ, 1/16W |
| | R907 | NRSA63J-391N | RESISTOR | 390Ω, 1/16W |
| | R908 | NRSA63J-473N | RESISTOR | 47KΩ, 1/16W |
| | C601 | QEF81VM-224 | TANTAL CAPACITOR | 0.22μF, 35V |
| | C602 | QEF81CM-105 | TANTAL CAPACITOR | 1μF, 16V |
| | C603 | NCB31EK-103A | CAPACITOR | 0.01μF, 25V |
| | C604 | QEF81DM-156 | TANTAL CAPACITOR | 15μF, 20V |
| | C605 | NCR31CK-223A | CAPACITOR | 0.022μF, 16V |
| | C606 | QEF81AM-226 | TANTAL CAPACITOR | 22μF, 10V |
| | C609 | QEF81CM-105 | TANTAL CAPACITOR | 1μF, 16V |
| | C610 | NCR21CM-473A | CAPACITOR | 0.047μF, 16V |
| | or | PU59913-473 | CAPACITOR | 0.047μF |
| | C611 | QEF81AM-106 | TANTAL CAPACITOR | 10μF, 10V |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | C612 | NCR21CM-473A | CAPACITOR | 0.047$\mu$F, 16V |
| | | or PU59913-473 | CAPACITOR | 0.047$\mu$F |
| | C613 | NCR31CK-223A | CAPACITOR | 0.022$\mu$F, 16V |
| | C614 | NCB31HK-102A | CAPACITOR | 0.001$\mu$F, 50V |
| | C615 | QEF81VM-224 | TANTAL CAPACITOR | 0.22$\mu$F, 35V |
| | C616 | QEF81AM-476 | TANTAL CAPACITOR | 47$\mu$F, 10V |
| | C617 | NCB31EK-103A | CAPACITOR | 0.01$\mu$F, 25V |
| | C618 | NCB31EK-103A | CAPACITOR | 0.01$\mu$F, 25V |
| | C619 | NCF31CZ-104A | CAPACITOR | 0.1$\mu$F, 16V |
| | C620 | NCB31EK-103A | CAPACITOR | 0.01$\mu$F, 25V |
| | C621 | QEF81VM-685 | TANTAL CAPACITOR | 6.8$\mu$F, 35V |
| | C622 | NCB31EK-103A | CAPACITOR | 0.01$\mu$F, 25V |
| | C902 | PU59758-105 | CAPACITOR | 1$\mu$F |
| | C903 | NCF31CZ-104A | CAPACITOR | 0.1$\mu$F, 16V |
| | C904 | YU40470-103A | CAPACITOR | |
| | L601 | YU41135-101KY | COIL | 100$\mu$H |
| | L602 | YU41135-101KY | COIL | 100$\mu$H |
| | L603 | YU41135-101KY | COIL | 100$\mu$H |
| | TP601 | YU40581-AY | CHIP TP, IRIS DATA OUT | |
| | TP602 | YU40581-AY | CHIP TP, GND | |
| | CN601 | YU40682-10 | CAP HOUSING, (BOARD TO BOARD) | |
| | CN602 | YU40678-8 | CAP HOUSING | |
| | CN603 | YU40678-30 | CAP HOUSING | |
| | CN604 | YU40101-12 | CAP HOUSING, (BOARD TO BOARD) | |
| | CN606 | YU40096-4 | CAP HOUSING | |
| | CN611 | YU40096-5 | CAP HOUSING | |
| | CN612 | YU40096-8 | CAP HOUSING | |
| | CN613 | YU40096-2 | CAP HOUSING | |

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## 21. BATTERY BASE BOARD ASSEMBLY ⟨27⟩

| REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|
| PWBA | YB20186A | BATTERY BASE BOARD ASSY |
| SW701 | PU57008 | TACT SWITCH |
| SW702 | PU57008 | TACT SWITCH |
| SW703 | YU40111 | SLIDE SWITCH |
| SW704 | YU40111 | SLIDE SWITCH |
| KNB1 | YQ40939-1-2 | KNOB (ALARM) |
| KNB2 | YQ40939-1-2 | KNOB (ALARM) |
| CN703 | YU40096-7 | CAP HOUSING |
| CN707 | YU40096-3 | CAP HOUSING |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|

* * *

## 22. UPPER DRUM BOARD ASSEMBLY ⟨30⟩

| REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|
| PWBA | YDM3033 | UPPER DRUM BOARD ASSY |

* * *

## 23. AV JACK BOARD ASSEMBLY ⟨31⟩

| REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|
| PWB | YU41335 | AV JACK BOARD ASSY |
| CN1 | YU40106-14 | CAP HOUSING |

* * *

## 24. TRIGGER BOARD ASSEMBLY ⟨32⟩

| REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|
| PWBA | YB30048A | TRIGGER BOARD ASSY |
| SW1 | PU59843 | TACT SWITCH |

* * *

## 25. SENSOR BOARD ASSEMBLY ⟨33⟩

| REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|
| PWBA | YQ41188A-3 | SENSOR BOARD ASSY |
| PT1 | TPS605 | PHOTO TRANSISTOR, X2 |
| PT2 | TPS605 | PHOTO TRANSISTOR |
| PS1 | TLP907 | PHOTO SENSOR |
| CN1 | YU40102-8 | CAP HOUSING |

* * *

## 26. LED BOARD ASSEMBLY ⟨34⟩

| REF No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|
| PWBA | YQ41189A-2 | LED BOARD ASSY |
| D1 | TLR121 | LE DIODE |
| D2 | TLR121 | LE DIODE |
| CN1 | YU40105-8 | CAP HOUSING |

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## 27. E. VIEWFINDER ASSEMBLY ⟨41⟩

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | PWBA | YU30236-102 | E. VF BOARD ASSEMBLY (PAL) | |
| ⚠ | IC1 | AN2510S | IC | |
| | IC2 | AN78L05 | IC | |
| | TR1 | 2SC2812 | TRANSISTOR | |
| | | or 2SC2412K | TRANSISTOR | |
| | | or 2SD601A | TRANSISTOR | |
| | | or 2SC3052 | TRANSISTOR | |
| ⚠ | TR2 | 2SD774 | TRANSISTOR | |
| ⚠ | | or 2SD1815 | TRANSISTOR | |
| | D01 | DCB010 | DIODE | |
| | | or MA151WK | DIODE | |
| | | or DAN202K | DIODE | |
| | D02 | ERA15-06 | DIODE | |
| | D03 | MA152WK | DIODE | |
| | D04 | ESJA04-02 | DIODE | |
| | D05 | MA157A | DIODE | |
| | D06 | LN28CAL | LE DIODE | |
| | R20 | QRSA08J-682 | RESISTOR | 6.8KΩ, 1/10W |
| | R21 | QRSA08J-3R9YN | RESISTOR | 3.9Ω, 1/10W |
| | R22 | QRSA08J-102 | RESISTOR | 1KΩ, 1/10W |
| | R23 | QRSA08J-180 | RESISTOR | 18Ω, 1/10W |
| | R24 | QRSA08J-151 | RESISTOR | 150Ω, 1/10W |
| | R25 | QRSA08J-202 | RESISTOR | 2KΩ, 1/10W |
| | R26 | QRSA08J-332 | RESISTOR | 3.3KΩ, 1/10W |
| | R27 | QRSA08J-122 | RESISTOR | 1.2KΩ, 1/10W |
| | R28 | QRSA08J-562 | RESISTOR | 5.6KΩ, 1/10W |
| | R29 | QRSA08J-683 | RESISTOR | 68KΩ, 1/10W |
| | R30 | QRSA08J-222 | RESISTOR | 2.2KΩ, 1/10W |
| | R31 | QRSA08J-561 | RESISTOR | 560Ω, 1/10W |
| | R32 | QRSA08J-471 | RESISTOR | 470Ω, 1/10W |
| | R33 | QRSA08J-471 | RESISTOR | 470Ω, 1/10W |
| | R34 | QRSA08J-561 | RESISTOR | 560Ω, 1/10W |
| | R40 | QRSA08J-512 | RESISTOR | 5.1KΩ, 1/10W |
| | R41 | QRSA08J-512 | RESISTOR | 5.1KΩ, 1/10W |
| | R42 | QRSA08J-103 | RESISTOR | 10KΩ, 1/10W |
| | R43 | QRSA08J-102 | RESISTOR | 1KΩ, 1/10W |
| | R44 | QRSA08J-273 | RESISTOR | 27KΩ, 1/10W |
| | R45 | QRSA08J-472 | RESISTOR | 4.7KΩ, 1/10W |
| | R50 | QRS188J-335YN | RESISTOR | 3.3MΩ, 1/8W |
| | R51 | QRS188J-335YN | ESISTOR | 3.3MΩ, 1/8W |
| | R52 | QRSA08J-332 | RESISTOR | 3.3KΩ, 1/10W |
| | R53 | NRS144J-331 | RESISTOR | 330Ω, 1/4W |
| | R54 | QRSA08J-240 | RESISTOR, (RX) | 24Ω, 1/10W |

| #⚠ | REF No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | VR1 | YU30236-111 | V RESISTOR, V. HIGHT | |
| | VR2 | YU30236-112 | V RESISTOR, H. HOLD | |
| | VR3 | YU30236-113 | V RESISTOR, CONTRAST | |
| | VR4 | YU30236-114 | V RESISTOR, BRIGHT | |
| | C20 | QCYA1HK-561 | CAPACITOR | 560PF, 50V |
| | C21 | YU30236-105 | TANTAL CAPACITOR | |
| | C22 | QER41AM-336 | E CAPACITOR | 33µF, 10V |
| | C23 | QER41AM-336 | E CAPACITOR | 33µF, 10V |
| | C24 | QEK40JM-227 | E CAPACITOR | 220µF, 6.3V |
| | C25 | QCTA1UJ-152 | CAPACITOR | 0.0015µF |
| | C26 | QER41CM-106 | E CAPACITOR | 10µF, 16V |
| | C27 | QCYA1EK-223 | CAPACITOR | 0.022µF, 25V |
| | C28 | QER41HM-474 | E CAPACITOR | 0.47µF, 50V |
| | C29 | QEK41CM-107 | E CAPACITOR | 100µF, 16V |
| | C40 | QCTA1CH-271 | CAPACITOR | 270PF, 16V |
| | C41 | QEK41HM-335 | E CAPACITOR | 3.3µF, 50V |
| | C42 | QCFA1EZ-333 | CAPACITOR | 0.033µF, 25V |
| | C43 | QEK41CM-107 | CAPACITOR | 100µF, 16V |
| | C45 | QCF81CZ-105 | CAPACITOR | 1µF, 16V |
| | C46 | QER41HM-475 | E CAPACITOR | 4.7µF, 50V |
| | C47 | QFG42AJ-100 | CAPACITOR | 10PF, 100V |
| | C48 | PU59343 | CAPACITOR | |
| | C49 | QEK41CM-107 | E CAPACITOR | 100µF, 16V |
| | L01 | YU30236-106 | COIL | 10H |
| | L02 | YU30236-107 | HL COIL (HLC) | |
| | SW1 | YU30236-108 | SWITCH | |
| ⚠ | TH1 | YU30236-110 | THERMISTOR | |
| ⚠ | T1 | YU30236-109 | FLY BACK TRANS, (FBT) | |
| | WR1 | YU30236-104 | WIRE ASSY (10 PIN) | |
| | CN1 | YU30236-115 | CAP HOUSING | |
| | CN2 | YU30236-116 | CAP HOUSING | |
| | CN3 | YU30236-117 | CAP HOUSING | |
| | CN4 | YU30236-118 | CAP HOUSING | |
| | VF1 | YU30236-103 | VF CABLE | |
| ⚠ | CP1 | ICP-N10 | CIRCUIT PROTECTOR | |
| ⚠ | TF1 | S1 | THERMAL FUSE | |

# SECTION 8
# TECHNICAL INFORMATIONS

## 8.1 S/S BOARD ASSEMBLY

### 8.1.1 IC1 (M37405E5-195FP)

| PIN No. | SYMBOL | LABEL | IN/OUT | NOTE |
|---|---|---|---|---|
| 1 | KEY D | KEY SCAN DATA D | IN | TRIGGER, TRACKING +, TRACKING – |
| 2 | KEY C | KEY SCAN DATA C | IN | FADER, ANIME, INTERVAL TIME, RETAKE REW, QUICK REVIEW, RETAKE FF |
| 3 | KEY B | KEY SCAN DATA B | IN | EDIT, INSERT, AUDIO DUBBING, REC, VISS, REHEARSAL |
| 4 | KEY A | KEY SCAN DATA A | IN | EJECT, SLOW, STILL, PLAY, FF, REW, STOP |
| 5 | A FF | AUDIO FLIPFLOP | OUT | AUDIO HEAD SWITCH SIGNAL |
| 6 | C FG | CAPSTAN FG | IN | CAPSTAN ROTATION DETECTION |
| 7 | D FF | DRUM FLIPFLOP | IN | DRUM ROTATION DETECTION, REC START TIMING, END LED ON TIMING |
| 8 | PB CTL | PB CONTROL | IN | CONTROL PULSE DETECTION |
| 9 | REC (+) | REC (+) | OUT | CONTROL PULSE WRITE |
| 10 | REC (–) | REC (–) | OUT | |
| 11 | – | NC | – | – |
| 12 | NC | NC | – | – |
| 13 | NC | NC | – | – |
| 14 | DRUM ON | DRUM MOTOR START | OUT | H : ON L : OFF |
| 15 | REV | REVERSE | OUT | |
| 16 | P SW | POWER SW (‾↓_) | IN | |
| 17 | Y NR | Y NR PULSE | OUT | PULSE OUTPUT IN V. PERIOD |
| 18 | OE | OUTPUT ENABLE | OUT | SERIAL CLOCK OUTPUT ENABLE |
| 19 | CLOCK | CLOCK | IN | SERIAL DATA TRANSFER CLOCK |
| 20 | TX | SERIAL DATA | OUT | SERIAL DATA OUTPUT TERMINAL (to OPERATION) |
| 21 | RX | SERIAL DATA | IN | SERIAL DATA OUTPUT TERMINAL (from OPERATION) |
| 22 | VP | VERTICAL PULSE | OUT | |
| 23 | $\overline{\text{END LED}}$ | END LED | OUT | END SENSOR CONTROL L : ON H : OFF |
| 24 | P. CTL | POWER CONTROL (L) | OUT | |
| 25 | $\overline{\text{A. MUTE}}$ | AUDIO MUTE (L) | OUT | OUTPUT IN SPECIAL PLAYBACK |
| 26 | C SYNC | VIDEO SYNC | IN | |
| 27 | CNT Vss | GND | – | – |
| 28 | RESET | RESET (L) | IN | |
| 29 | X'TAL IN | X'TAL IN | IN | 8 MHz |
| 30 | X'TAL OUT | X'TAL OUT | OUT | |
| 31 | $\phi$ | NC | – | – |
| 32 | CPU Vss | GND | – | – |
| 33 | $\overline{\text{A DUB}}$ | AUDIO DUBBING (L) | OUT | |
| 34 | $\overline{\text{INSERT}}$ | INSERT (L) | OUT | |
| 35 | $\overline{\text{A. REC}}$ | AUDIO REC (L) | OUT | |
| 36 | $\overline{\text{SP}}$ | SP (L) / EP (H) | OUT | |
| 37 | $\overline{\text{A EE}}$ | AUDIO EE (L) | OUT | |
| 38 | $\overline{\text{V EE}}$ | VIDEO EE (L) | OUT | |
| 39 | $\overline{\text{PB}}$ | PB (L) | OUT | |
| 40 | $\overline{\text{SP SEARCH}}$ | SPECIAL SEARCH | OUT | |
| 41 | TX | SERIAL DATA | OUT | SERIAL DATA |
| 42 | CLOCK | SERIAL CLOCK | OUT | SERIAL CLOCK TRANSFER CLOCK |
| 43 | RDY | READY | IN | SERIAL CLOCK OUTPUT ENABLE |
| 44 | BIAS ON | BIAS ON (H) | OUT | |
| 45 | AL SW | ALL SW (L) | IN | |
| 46 | $\overline{\text{S}}\text{/M}$ | SERVO MODE | OUT | L : SERVO H : MECHACON |
| 47 | MP 1 | MECHANISM PULSE 1 | IN | MECHANISM MODE DETECTION |
| 48 | MP 0 | MECHANISM PULSE 0 | IN | |
| 49 | TU REEL | TAKE-UP REEL | IN | |
| 50 | SP REEL | SUPPLY REEL | IN | |
| 51 | NO SIG | NO SIGNAL | IN | PB VIDEO SIGNAL DETECTION |
| 52 | REC S SW | REC SAFETY SW (L) | IN | |
| 53 | $\overline{\text{EXT}}$ | EXTERNAL (L) | IN | |
| 54 | AC ADPT | AC ADAPTOR (H) | IN | |
| 55 | C SW | CASSETTE SW (L) | IN | |
| 56 | JIG | JIG | IN | RUNNING MODE |
| 57 | D PG | DRUM PG | IN | |
| 58 | D FG | DRUM FG | IN | |
| 59 | D F/V | DRUM F/V | OUT | DRUM ROTATION SPEED ERROR OUTPUT |
| 60 | D P/V | DRUM P/V | OUT | DRUM ROTATION PHASE ERROR OUTPUT |
| 61 | C F/V | CAPSTAN F/V | OUT | CAPSTAN ROTATION SPEED ERROR OUTPUT |
| 62 | C P/V | CAPSTAN P/V | OUT | CAPSTAN ROTATION PHASE ERROR OUTPUT |
| 63 | V REC | VIDEO REC (H) | OUT | |
| 64 | V REC M | VIDEO REC MUTE (H) | OUT | |
| 65 | STILL | STILL (H) | OUT | |
| 66 | V MUTE | VIDEO ALL MUTE (H) | OUT | |
| 67 | SP CTL | SPECIAL CONTROL | OUT | |
| 68 | FLY ON | FLYING ERASE ON | OUT | |
| 69 | LOAD (F) | LOADING REVERSE | OUT | For MODE CONTROL MOTOR CONTROL |
| 70 | LOAD (R) | LOADING FORWARD | OUT | |
| 71 | PG FM | PG MONO-MULTI | IN/OUT | |
| 72 | ANA Vss | GND | – | For A/D CONVERTER |
| 73 | CR Vss | Vcc | IN | 5 V POWER |
| 74 | ANA Vcc | Vcc | IN | POWER for A/D CONVERTER |
| 75 | V REF | VOLTAGE REFERENCE | IN | REFERENCE VOLTAGE for A/D CONVERTER |
| 76 | CAP POWER | CAPSTAN POWER UP (H) | OUT | |
| 77 | EDT S | EDIT START (H) | OUT | |
| 78 | VP MM | V. PULSE MONO-MULTI | IN | |
| 79 | END S | END SENSOR | IN | TAPE END DETECTION |
| 80 | B | BATTERY | IN | BATTERY VOLTAGE DETECTION |

**Table 8-1** IC1 (S/S) pin function

## 8.2 CPU BOARD ASSEMBLY

### 8.2.1 IC301 (M37100M8-492FP)

| PIN No. | SYMBOL | LABEL | IN/OUT | NOTE |
|---|---|---|---|---|
| 1 | – | GND | – | – |
| 2 | CHARGE | AUTO WHITE CHARGE | OUT | OUTPUT IN FADE-IN |
| 3 | DISCHARGE | AUTO WHITE DISCHARGE | OUT | OUTPUT IN FADE-OUT |
| 4 | TEST | TEST | IN | TEST MODE |
| 5 | VITC | – | – | NO USE |
| 6 | – | GND | – | – |
| 7 | CLKE CLD | GND | – | – |
| 8 | CLKE SUB | GND | – | – |
| 9 | LCD RDY | LCD READY | IN | SERIAL CLOCK OUTPUT ENABLE |
| 10 | – | GND | – | – |
| 11 | – | GND | – | – |
| 12 | SUB OE | SUB OUTPUT ENABLE | IN | SERIAL CLOCK OUTPUT ENABLE |
| 13 | LCD CLK | LCD SERIAL CLOCK | OUT | SERIAL DATA TRANSFER CLOCK |
| 14 | LCD OUT | LCD SERIAL OUT | OUT | SERIAL DATA OUTPUT |
| 15 | SUB IN | SUB SERIAL DATA IN | IN | SERIAL DATA INPUT |
| 16 | KEY X | KEY SCAN DATA X | IN | FOCUS / SHUTTER / AGC / DISPLAY SELECT / DISPLAY ON/OFF |
| 17 | – | GND | – | – |
| 18 | TRIG SW | TRIG SWITCH (‾↓_) | IN | |
| 19 | LLL | LOW LIGHT LOW (L) | IN | |
| 20 | – | GND | – | – |
| 21 | $\overline{\text{V SYNC}}$ | VERTICAL SYNC (L) | IN | |
| 22 | P SW | POWER SW | IN | For TEST MODE |
| 23 | – | GND | – | – |
| 24 | GND | GND | – | – |
| 25 | – | GND | – | – |
| 26 | $\overline{\text{RESET}}$ | RESET (L) | IN | |
| 27 | CLOCK 4 MHz | CLOCK 4 MHz | IN | 4 MHz |
| 28 | CLOCK 4 MHz | CLOCK 4 MHz | OUT | |
| 29 | – | NC | – | – |
| 30 | XC IN | GND | – | – |
| 31 | XC OUT | NC | – | – |
| 32 | GND | GND | – | – |
| 33 | GND | GND | – | – |
| 34 | – | NC | – | – |
| 35 | DISPLAY CLOCK | DISPLAY CLOCK | IN | ON-SCREEN DISPLAY CLOCK |
| 36 | DISPLAY CLOCK | DISPLAY CLOCK | OUT | |
| 37 | S RDY | SERIAL READY | OUT | SERIAL CLOCK OUTPUT ENABLE |
| 38 | VTR CLOCK | SERIAL CLOCK | IN | SERIAL TRANSFER CLOCK |
| 39 | – | NC | – | – |
| 40 | VTR TX | SERIAL DATA | IN | SERIAL DATA |
| 41 | – | GND | – | – |
| 42 | ONE SHOT | ONE SHOT TIME COUNTER | IN | ON : OPEN OFF : LOW |
| 43 | – | GND | – | – |
| 44 | CLOCK OE IN | CLOCK OUTPUT ENABLE | OUT | SERIAL CLOCK OUTPUT ENABLE |
| 45 | DP 1 | | OUT | |
| 46 | DP 0 | | OUT | |
| 47 | DPCK 1 | – | – | NO USE |
| 48 | DPCK 0 | – | – | NO USE |

| F1 | F2 | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| L | L | NORMAL | Year | Mon. | Day | Hour | Min. |
| L | H | NORMAL | Mon. | Day | Year | Hour | Min. |
| H | L | NORMAL | Day | Mon. | Year | Hour | Min. |
| H | H | NORMAL | Min. | Hour | Day | Mon. | Year |

| PIN No. | SYMBOL | LABEL | IN/OUT | NOTE |
|---|---|---|---|---|
| 49 | DATA IN | SERIAL DATA IN | IN | DATA/TIME SERIAL DATA |
| 50 | CLOCK DATA READY IN | SERIAL CLOCK | OUT | SERIAL CLOCK |
| 51 | – | GND | – | – |
| 52 | – | GND | – | – |
| 53 | AGC OFF | AUTO GAIN CONTROL OFF | OUT | L : OFF |
| 54 | TALLY | TALLY LAMP (H) | OUT | |
| 55 | SHT 1 | SHUTTER 1 | OUT | SHT 1: L, SHT 2: L No Display<br>SHT 1: L, SHT 2: H S1000<br>SHT 1: H, SHT 2: L S500<br>SHT 1: H, SHT 2: H S250 |
| 56 | SHT 0 | SHUTTER 0 | OUT | |
| 57 | AF 0 | AUTO FOCUS 0 | IN | AF 1: L, AF 2: L ▶ ● ◀<br>AF 1: L, AF 2: H ◀<br>AF 1: H, AF 2: L ▶<br>AF 1: H, AF 2: H ● |
| 58 | AF 1 | AUTO FOCUS 1 | IN | |
| 59 | AF OFF | AUTO FOCUS OFF (H) | OUT | |
| 60 | FULL AUTO | FULL AUTO (H) | OUT | |
| 61 | – | GND | – | – |
| 62 | C P ON | CAMERA POWER ON (H) | OUT | |
| 63 | – | NC | – | – |
| 64 | | VERTICAL SYNC | IN | |
| 65 | | HORIZONTAL SYNC | IN | |
| 66 | – | NC | – | – |
| 67 | – | NC | – | – |
| 68 | | VF | OUT | CHARACTER TIMING PULSE (For VF) |
| 69 | | VIDEO | OUT | CHARACTER TIMING PULSE (For A/V) |
| 70 | – | NC | – | – |
| 71 | – | NC | – | – |
| 72 | Vcc | ALL 5 V | IN | |
| 73 | GND | GND | – | – |
| 74 | – | GND | – | – |
| 75 | – | GND | – | – |
| 76 | – | GND | – | – |
| 77 | – | GND | – | – |
| 78 | FAD OUT | FADER OUT | OUT | FADER PULSE OUTPUT |
| 79 | – | GND | – | – |
| 80 | – | GND | – | – |

**Table 8-2** IC301 (CPU) pin function

## 8.2.2 IC302 (M37450M2-152FP)

| PIN No. | SYMBOL | LABEL | IN/OUT | NOTE |
|---|---|---|---|---|
| 1 | – | GND | – | – |
| 2 | – | GND | – | – |
| 3 | – | GND | – | – |
| 4 | – | GND | – | – |
| 5 | – | GND | – | – |
| 6 | – | GND | – | – |
| 7 | WB LOCK | WHITE BALANCE LOCK | IN | H : AW LOCK L : AW LOCK NG |
| 8 | WB 4 | WHITE BALANCE 4 | OUT | |
| 9 | WB 3 | WHITE BALANCE 3 | OUT | |
| 10 | WB 2 | WHITE BALANCE 2 | OUT | |
| 11 | WB 1 | WHITE BALANCE 1 | OUT | |
| 12 | I LOCK | IRIS LOCK (L) | OUT | |
| 13 | – | NC | – | – |
| 14 | – | NC | – | – |
| 15 | – | NC | – | – |
| 16 | – | GND | – | – |
| 17 | FA ON | FULL AUTO ON (H) | IN | |
| 18 | SUB ON | SUB CPU ON (H) | IN | |
| 19 | V SYNC | VERTICAL SYNC | IN | |
| 20 | – | NC | – | – |
| 21 | – | NC | – | – |
| 22 | – | NC | – | – |
| 23 | – | NC | – | – |
| 24 | – | NC | – | – |
| 25 | CN Vcc | GND | | – |
| 26 | $\overline{\text{RESET}}$ | RESET (L) | IN | – |
| 27 | – | NC | – | |
| 28 | CPU CLOCK IN | CPU CLOCK IN | IN | 4 MHz – |
| 29 | – | NC | – | – |
| 30 | – | NC | – | – |
| 31 | – | NC | – | – |
| 32 | GND | GND | – | – |
| 33 | – | TEST | – | – |
| 34 | – | TEST | – | – |
| 35 | – | TEST | – | – |
| 36 | – | TEST | – | – |
| 37 | TEST | TEST | IN | – |
| 38 | – | GND | – | – |
| 39 | – | GND | – | – |
| 40 | – | GND | – | – |
| 41 | – | NC | – | – |
| 42 | P17 | GND | – | – |
| 43 | P16 | GND | – | – |
| 44 | P15 | GND | – | – |
| 45 | P14 | GND | – | – |
| 46 | P13 | NC | – | – |
| 47 | P12 | NC | – | – |
| 48 | P11 | IRIS LOCK (H) | OUT | |
| 49 | P10 | NC | – | – |
| 50 | – | GND | – | – |
| 51 | – | GND | – | – |
| 52 | – | GND | – | – |
| 53 | – | GND | – | – |
| 54 | – | GND | – | – |
| 55 | – | GND | – | – |
| 56 | – | GND | – | – |
| 57 | – | GND | – | – |
| 58 | KEY I | KEY IRIS | IN | AUTO/MANUAL/APERTURE-MANU IRIS ⊕/APERTURE-MANU IRIS ⊖ |
| 59 | KEY W | KEY WHITE BALANCE | IN | FULL AUTO/W. BALANCE/W. LOCK |
| 60 | – | GND | – | – |
| 61 | | GND | – | – |
| 62 | – | GND | – | – |
| 63 | – | GND | – | – |
| 64 | – | NC | – | – |
| 65 | DATA | IRIS DATA | IN | IRIS POSITION DETECTION |
| 66 | IRIS 1 | IRIS 1 | OUT | IRIS CONTROL |
| 67 | IRIS 2 | IRIS 2 | OUT | |
| 68 | DAV | +5 V | IN | For D/A CONV. |
| 69 | DAV REF | +5 V | IN | For A/D CONV. |
| 70 | GND | GND | – | – |
| 71 | AVcc | +5 V | IN | |
| 72 | Vcc | +5 V | IN | |
| 73 | GND | GND | – | |
| 74 | (RDY) OE | SUB OUTPUT ENABLE | OUT | SERIAL CLOCK OUTPUT ENABLE |
| 75 | CLK | SERIAL CLOCK | IN | SERIAL DATA TRANSFER CLOCK |
| 76 | TX | SERIAL DATA | OUT | SERIAL DATA |
| 77 | GND | GND | – | – |
| 78 | – | | – | – |
| 79 | NTSC/$\overline{\text{PAL}}$ | NTSC/$\overline{\text{PAL}}$ | IN | H : NTSC L : PAL |
| 80 | – | NC | – | – |

| Pin | Operation | | | | | |
|---|---|---|---|---|---|---|
| WB 1 | L | L | H | H | H | H. |
| WB 2 | L | H | L | H | H | H |
| WB 3 | H | H | H | H | L | L |
| WB 4 | L | L | L | H | H | L |
| | IN-DOOR | FL | OUT-DOOR | FULL AUTO | TOUCH AUTO | |

**Table 8-3** IC302 (CPU) pin function

### 8.2.3 IC303 (S-3500A2)

<table>
<tr><th>Pin No.</th><th>Symbol</th><th>IN/OUT</th><th>Pin Function</th></tr>
<tr><td>1</td><td>T1</td><td>IN</td><td>for TEST</td></tr>
<tr><td>2</td><td>1 Hz</td><td>OUT</td><td>NC</td></tr>
<tr><td>3</td><td>F2</td><td>IN</td><td rowspan="2">
<table>
<tr><th>F1</th><th>F2</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th></tr>
<tr><td>L</td><td>L</td><td>NORMAL</td><td>Year</td><td>Month</td><td>Day</td><td>Hour</td><td>Minute</td></tr>
<tr><td>L</td><td>H</td><td>NORMAL</td><td>Month</td><td>Day</td><td>Year</td><td>Hour</td><td>Minute</td></tr>
<tr><td>H</td><td>L</td><td>NORMAL</td><td>Day</td><td>Month</td><td>Year</td><td>Hour</td><td>Minute</td></tr>
<tr><td>H</td><td>H</td><td>NORMAL</td><td>Minute</td><td>Hour</td><td>Day</td><td>Month</td><td>Year</td></tr>
</table>
</td></tr>
<tr><td>4</td><td>F1</td><td>IN</td></tr>
<tr><td>5</td><td>X IN</td><td>IN</td><td rowspan="2">32.768 kHz</td></tr>
<tr><td>6</td><td>X OUT</td><td>OUT</td></tr>
<tr><td>7</td><td>Vss</td><td>–</td><td>GND</td></tr>
<tr><td>8</td><td>S1</td><td>IN</td><td>L : To ADVANCE</td></tr>
<tr><td>9</td><td>S2</td><td>IN</td><td>L : To SET</td></tr>
<tr><td>10</td><td>CLK</td><td>IN</td><td>SERIAL CLOCK</td></tr>
<tr><td>11</td><td>OE</td><td>IN</td><td>L : DATA TRANSFER</td></tr>
<tr><td>12</td><td>DATA</td><td>OUT</td><td>DATE/TIME SERIAL DATA</td></tr>
<tr><td>13</td><td>T2</td><td>IN</td><td>For TEST</td></tr>
<tr><td>14</td><td>VDD</td><td>IN</td><td>For POWER (1.5 V)</td></tr>
</table>

**Table 8-4** IC303 (CPU) pin function

# SECTION 9
# SERVICE GUIDE

## 9.1 EMERGENCY MODE TABLE

| No. | Indication (Flickering) | Description | Monitor | Mode Shift | | |
|---|---|---|---|---|---|---|
| | | | | UNLOADING | EJECT | STOP |
| 1 | ❚❚ | Mode cannot be set to the next even after the loading motor has rotated for 10 sec. | Mode Sensor | X | X | LOADING & UNLOADING |
| 2 | ▶ ◀◀ | No input to the reel sensor in the Loading mode. | Reel Sensor | X | X | LOADING |
| 3 | ▶ ▶▶ | No. D. FF pulse inputted | D. FF circuit | ○ | ○ | UNLOADING |
| 4 | 🔋 | In case the battery is used as the power source and its output voltage is 9.2 V or less. | Power Terminal | X | X | LOADING |
| 5 | 💧 | Dew inside the set | Dew Sensor | ○ | ○ | UNLOADING |
| 6 | 📼 | No cassette inserted, or, cassette without the safety tab inserted. | Cassette Sensor,<br>REC Safety Sensor | – | ○ | – |

**Note:** In an emergency mode, the indication corresponding to the situation is displayed for 5 minutes, and then the power is turned off* automatically. (* When power is supplied from the AC adapter, it is not turned off.)